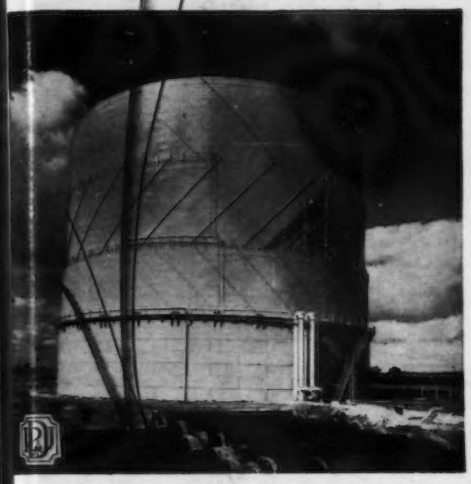
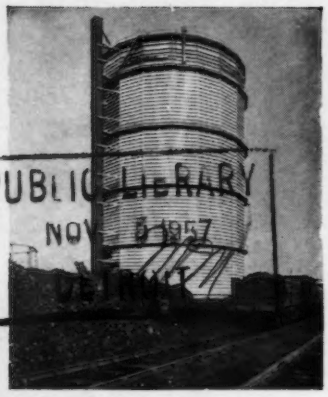
Gas Journal

VOL. 292. 109th YEAR. LONDON, OCTOBER 16, 1957. No 4918. PRICE 1/6

PUBLIC LIBRARY
NOV 1957

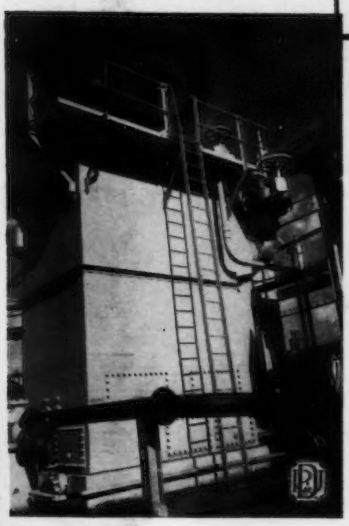


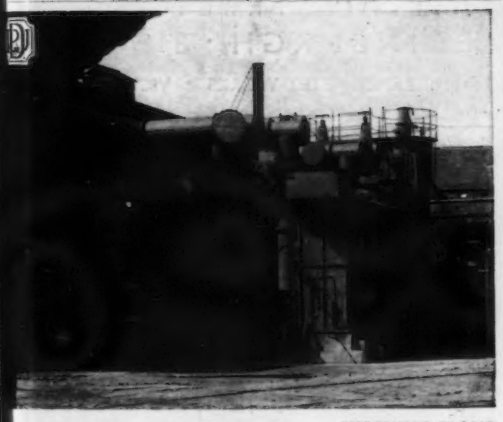
SPIRAL GASHOLDERS



WATERLESS GASHOLDERS

CONDENSERS





WASHING PLANT

ELECTRO DETARRERS

A FEW EXAMPLES OF HIGH QUALITY

GASWORKS PLANT

TRAY PURIFIER INSTALLATIONS

by

R. & J.

DEMPSTER

LIMITED

Constructional Gas and Chemical Engineers

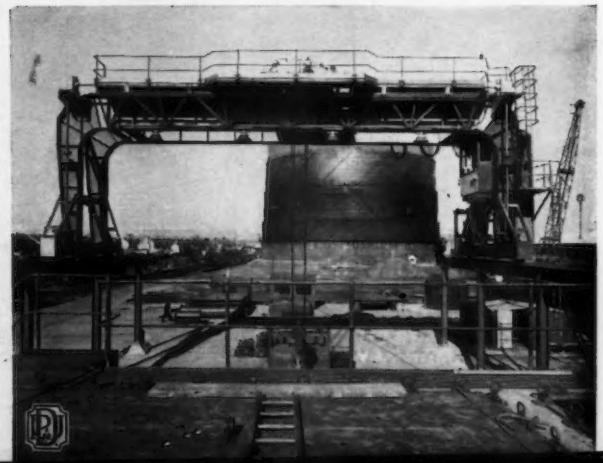
MAKERS OF HIGH QUALITY BY-PRODUCT and CHEMICAL PLANT
CONDENSERS · CONNECTIONS and VALVES · DETARRERS
GASHOLDERS · IRON CASTINGS · PURIFIERS · STILLS · TANKS
WASHERS · WELDED and RIVETED STEELWORK

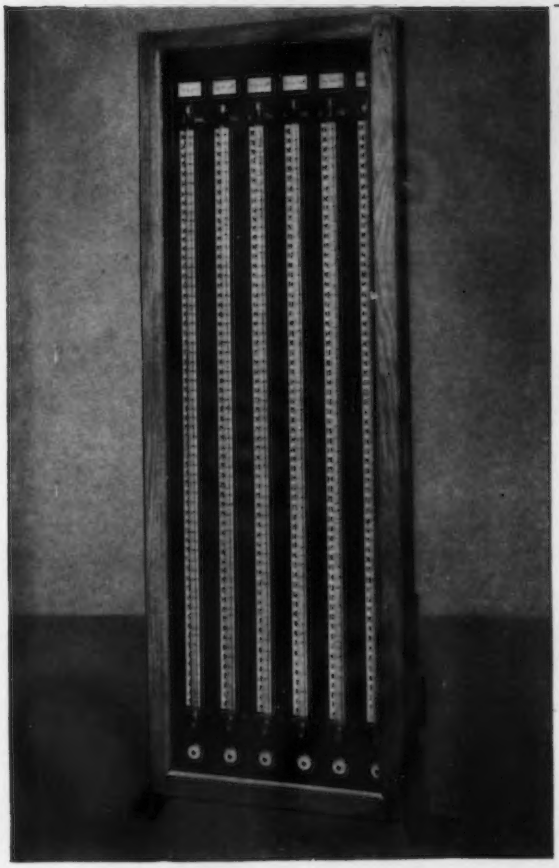
GAS PLANT WORKS - NEWTON HEATH

MANCHESTER 10

Telephone: COLlyhurst 2554, 5 & 6
Telegrams: "SCRUBBER, MANCHESTER 10"

London Office: 34 VICTORIA STREET, S.W.1
Telephone: ABBey 4426 Telegrams: "Scrubber, Sowest, London"





PRESSURE GAUGES

FOR

THE GAS AND CHEMICAL INDUSTRIES

Milne (Edinburgh) Ltd.

MILTON HOUSE WORKS
MILTON STREET
EDINBURGH · 8

LEEDS BRANCH · MIDLAND METER WORKS · VICTORIA ROAD

FOR THE CHEMICAL INDUSTRY
FOR THE GAS INDUSTRY
FOR ALL
INDUSTRIAL USES
WHERE A RELIABLE
FORM OF BLOWING
OR BOOSTING
IS REQUIRED

V50 BOOSTERS BLOWERS

EX-STOCK
(BARE END SHAFT)
DUTIES

600 C.F.M. AT 13" W.G. TO 1000 C.F.M. AT 9" W.G. } ON GAS

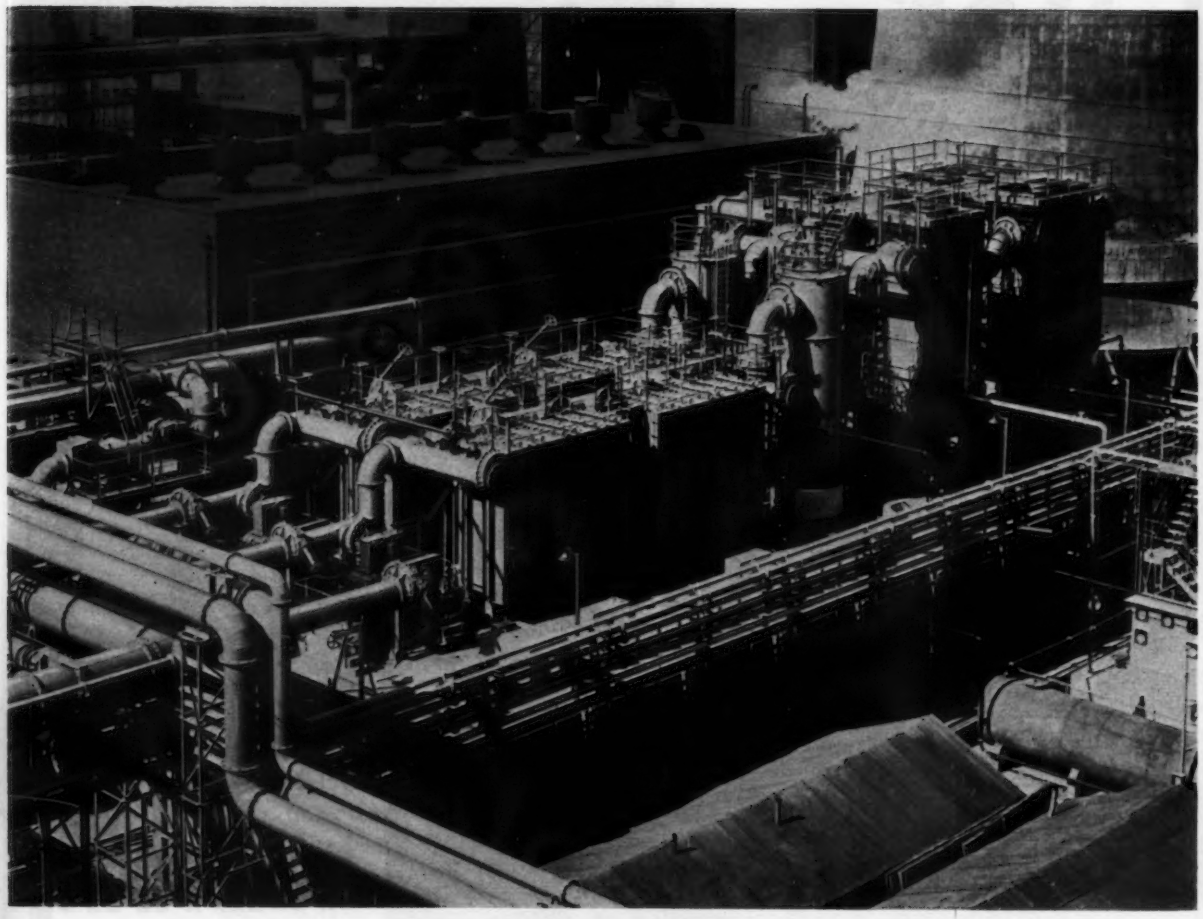
600 C.F.M. AT 26" W.G. 1000 C.F.M. AT 18" W.G. } ON AIR

ASK FOR PUBLICATION No. P/79

THE BRYAN DONKIN COMPANY LIMITED
CHESTERFIELD — LONDON

WHESSOE —

AT ROTHERHAM



WET PURIFICATION PLANT

Two complete treatment streams comprising condensers, W.W-D. electro-detarrers and multi-stage scrubbers, each stream capable of handling 4½ million cu. ft. of gas per day, were supplied to the order of Woodall-Duckham Construction Co. Ltd. for the Rotherham Works of the East Midlands Gas Board. A third similar stream is in the course of construction.

WHESSOE

An advertisement of WHESSOE LIMITED Darlington and London

CHWR/W/95

A

MANOX OXIDE
FOR THE GAS INDUSTRY
The material offered is our own manufacture, and is of the following composition:—
Moisture ... ... 3% (loss on heating at 212° F)
63%-65% (Total Iron calculated as Ferric Hydrate Fe2O3.3H2O on the dry basis.)
The following allowances will be made in the case of any deviation from the above specification:—
For each complete 1% Moisture in excess of 3% 6d. per ton allowance.
For each complete 1% Ferric Hydrate less than 63% 6d. per ton allowance.
SPEEDIER DELIVERY
MANOX OXIDE
COL 1551
MANOX OXIDE
HARDMAN & HOLDEN LIMITED
MANOX HOUSE
MILES PLATTING
MANCHESTER 10
Tel. COLlyhurst 1551 (10 lines)
Grams. "OXIDE" MANCHESTER

LINCOLN ELECTRIC SERVES THE INDUSTRY OF THE WORLD 10

Thames Haven to Romford Pipeline

In constructing this 17-mile 24-inch welded steel pipeline for the North Thames Gas Board and Shell-Mex & B.P. Ltd., Messrs William Press & Son Ltd., are extensively using Lincoln Diesel Welding Units, Improved Fleetweld 5 and Improved Shield Arc 85 electrodes.

The agreement, that from mid-1958 Shell Haven Refinery will be transmitting to Romford 25 million therms of gas per year, largely depends on faultless pipework. The contracts call for the highest standard of welding, and ultrasonic testing is being used in conjunction with radiography by Messrs Metal and Pipeline Endurance Ltd. in their inspection and double-checking for weld quality.

The combination of Improved Fleetweld 5 and Improved Shield Arc 85 is being extensively used on all pipelines where the 'stove pipe' welding technique, high speeds and high mechanical joint efficiency are required.

IMPROVED BRITISH FLEETWELD 5

Improved Fleetweld 5 conforms to B.S. 639:1952, and is approved by Lloyd's Register of Shipping and the Ministry of Transport and Civil Aviation. It is also being used extensively in the expansion now taking place within the British Petroleum Industry, and the newly developing Petro-Chemical Industries.

LINCOLN

Largest manufacturers of D.C. Welders in the United Kingdom

LINCOLN ELECTRIC CO LTD · WELWYN GARDEN CITY · HERTS · WELWYN GARDEN 4581 (5 lines) 920 (5 lines)

T20

SIMON
PATENT AUTOMATIC COKE WEIGHER

Approved by the Board of Trade and stamped by the Weights and Measures Authorities.

Capacity: 28 to 112 lbs. per discharge (nett).

Speed of Weighing: Up to six weighings per minute.

Guaranteed accuracy and continuity of operation.

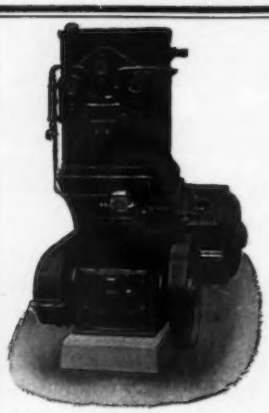
Machines may be seen working by appointment.

•

RICHARD SIMON & SONS, LTD.
PHOENIX WORKS, VERNON ROAD
BASFORD, NOTTINGHAM

Telephones: 75136-7-8

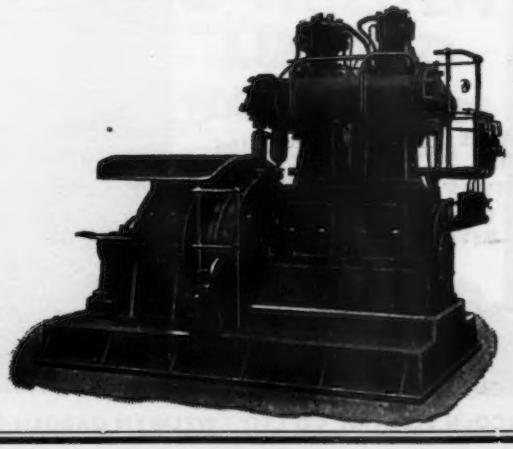
By Courtesy of the North Western Gas Board



HIGH PRESSURE GAS COMPRESSORS *for*
pressures up to 5,000 lbs. per sq. in.

The illustrations show two high pressure gas compressors. As specialists in the design and manufacture of compressors for both air and gases, we make compressors for a wide range of capacity and pressure up to 5000 lbs. per sq. inch.

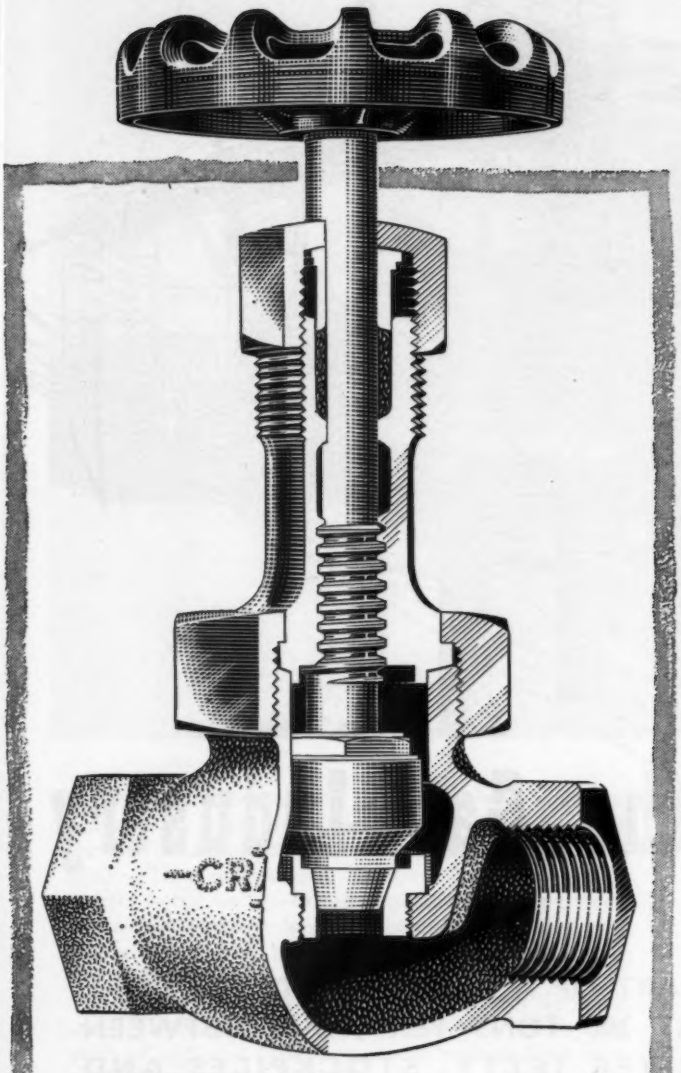
The compressor shown above has a capacity of 25 cu. ft. of free hydrogen per minute compressed to 3000 lbs./sq. inch. The illustration on the right shows a four-stage compressor with a delivered capacity of 200 cu. ft. of free town's gas per minute compressed to 5000 lbs. per sq. inch.



For full information regarding gas compressors, write, giving particulars of the duty required, to—

REAVELL & CO., LTD.
RANELAGH WORKS, IPSWICH
Telegrams: "REAVELL, IPSWICH." Phone No. IPSWICH 56124 (3 lines)

For High Pressures



D 52 Sizes: ¼" to 2"

Hexagon ends with British Standard Taper Threads or to American Standards where specified.

Crane Bronze Check Valves D122 or D145 are recommended for use with these valves.

CRANE BRONZE GLOBE VALVES

with renewable Nickel Alloy Disc and stainless steel seat ring

One of a series of Bronze Valves of greatly increased sturdiness and durability recently introduced by Crane, this new Globe Valve is designed especially for service under really rigorous conditions. The plug type nickel alloy disc and the stainless steel seat ring effect an extremely tight closure, whilst allowing close regulation of flow when throttling. The two dissimilar metals were chosen after extensive metallurgical tests as offering the best resistance to corrosion and 'wire-drawing', or damage by foreign matter. Both disc and ring are moreover renewable and additional discs and rings can be supplied.

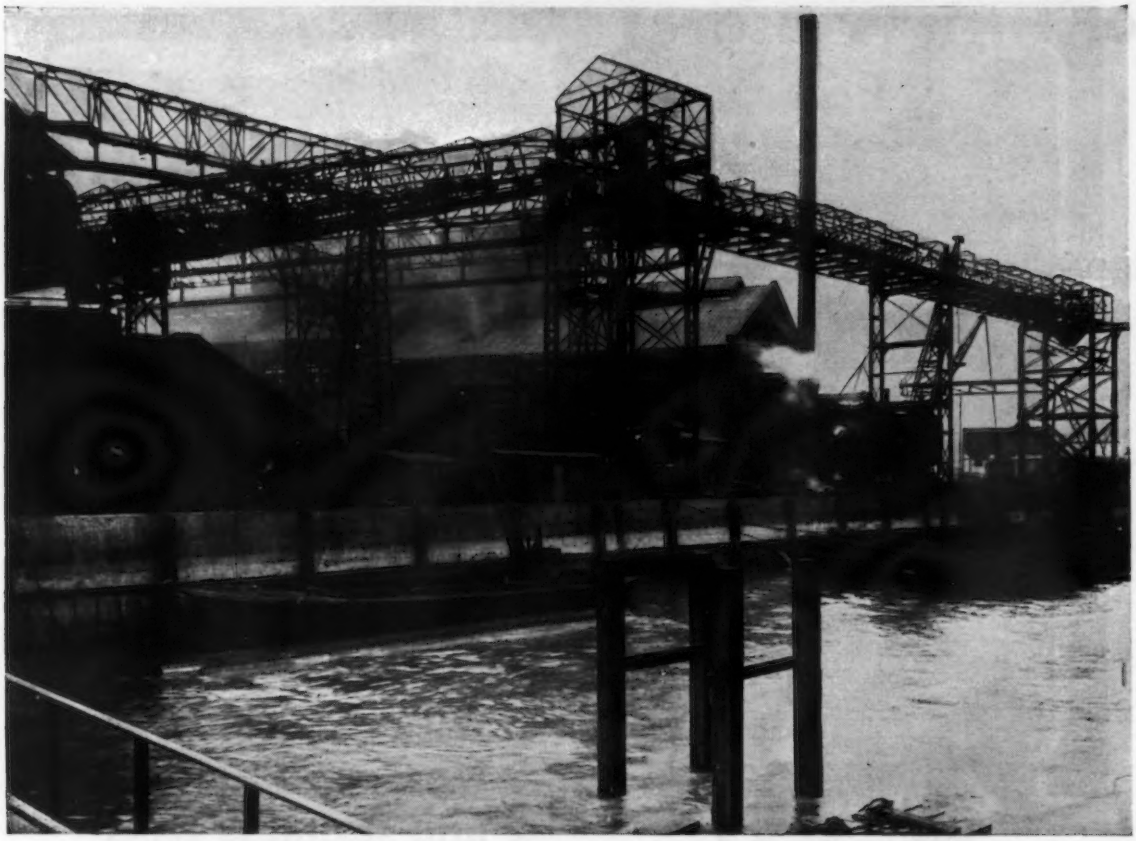
These valves are recommended for pressures up to 300 pounds (steam 550°F.) and 1000 pounds (water, oil or gas, cold, non-shock). They are manufactured from the usual Crane high grade materials, and like all Crane products, individually tested, are of extremely sturdy construction. Each valve is fitted with a Union Bonnet, making for ease of dismantling or reassembly after maintenance. Backseating allows the valves to be repacked whilst fully open under pressure.

CRANE

VALVES OF BRONZE, CAST IRON AND CAST STEEL

VS

CRANE LTD., 15-16 RED LION COURT, FLEET ST., LONDON, E.C.4. Works: IPSWICH. *Branches: Birmingham, Brentford, Bristol, Glasgow, London, Manchester*



Serving the Gas Industry

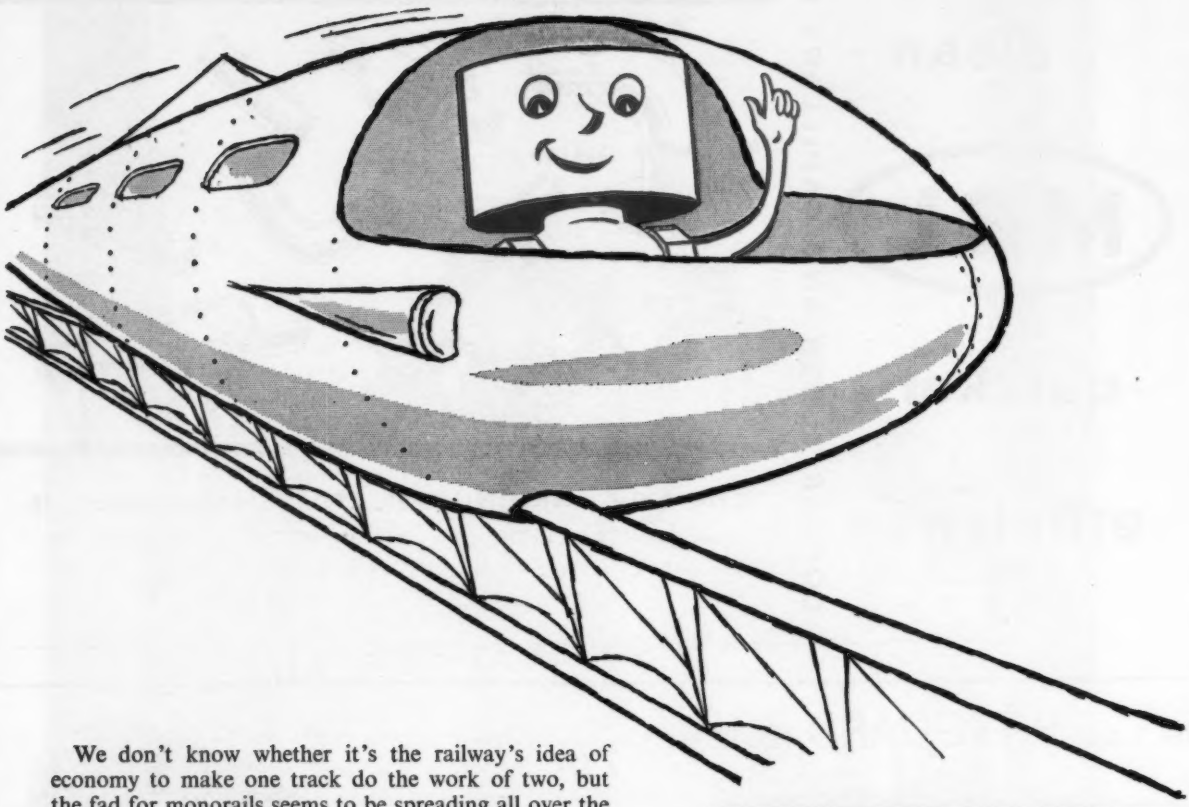
PART OF A PLANT HANDLING COAL AT 200 TONS PER HOUR BETWEEN RIVER JETTY, STOCKPILES AND RETORT HOUSES.

DESIGNERS & MANUFACTURERS of
Furnaces and Handling Plant, Gas Producers, Coke Ovens, Gas Works Plant, Dressler Tunnel Kilns and Refractories.

GIBBONS

GIBBONS BROTHERS LTD
P.O. BOX 19, DIBDALE · DUDLEY · WORCS.
Telephone: DUDLEY 3141 Telegrams: "GIBBONS" DUDLEY

It can't be done without CONTROL



We don't know whether it's the railway's idea of economy to make one track do the work of two, but the fad for monorails seems to be spreading all over the place. They tell us they go faster, smoother, safer, quieter — but we two-footed ancients have an ingrained distrust of anything lacking inherent equilibrium. Of course, it's all a matter of reliable controls — our slide-rule wallahs tell us they are foolproof and safe.

We ought to be able to understand this, for we make much the same claims for Magnetic Valves. Twenty-five years of skill and experience in the business have been used to make Magnetic Valves exercise unfailing automatic or remote control over industrial gases and liquids like air, steam, oil and coal gas. No help is enlisted from glands, driving shafts or stuffing boxes. If you ask us for more details, we will send you illustrated literature showing the standard range. Special valves up to 12 in. orifice can be supplied.

MANY VALVES AVAILABLE ex stock
VALVES DESIGNED for special conditions

THE MAGNETIC SINGLE-BEAT STOP VALVE

is suitable for controlling the flow of low pressure water, steam, oil, gas, air and other liquids normally passed through a pipe. This type can be adapted to suit many requirements, such as filling of containers, etc., and can be manufactured from varying grades of metals.

A Flameproof Solenoid Housing, Buxton Certified, can be fitted when required.

THE Magnetic Valve Company LIMITED

28 ST. JAMES'S PLACE, LONDON, S.W.1. Tel. HYDe Park 7588

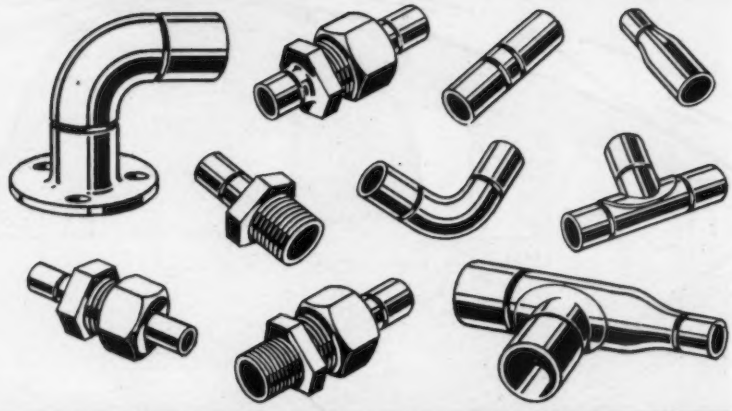
M.V. 16

neat · clean · quicker · efficient ·

MBL

COPPER TUBES AND CAPILLARY FITTINGS

For installation of Domestic Appliances, use M B L Capillary Fittings for all gas connections. They are made from Copper Tube and therefore make the perfect joint with M B L Copper Tube.
A full range from $\frac{1}{8}$" diameter available from stock. Full details upon request.



THE MINT, BIRMINGHAM, LTD., BIRMINGHAM, 18.
Phone: CENTRAL 2532. *Grams:* "MINT BIRMINGHAM."
Branches at LONDON · GLASGOW · MANCHESTER.

The T. & T. *VANGUARD* Portable Belt Conveyor

A glutton for work

and at almost a pre-war price

The T. & T. "Vanguard" has a full 18" wide belt, and many other features normally associated with Conveyors costing twice as much. It is a triumph of careful design, of carefully planned production and very high grade materials and components which have been thoroughly tested and which will give many years reliable service.

save money & man-hours with

T&T

CONVEYORS & ELEVATORS

Send for illustrated leaflet G.J. or ask for a technical representative to call to discuss your handling problems without obligation.

T. & T. WORKS LTD., BILLESDON, LEICESTER. Phone: Billesdon 261. Grams: "Conveyor", Leicester. London Office: 39, Windsor House, 46, Victoria Street, S.W.1. Tel: ABBey 6085. (All correspondence to Head Office at Billesdon).

This will tell you how to cut the cost of screwing **perfect** pipe threads **on the site** or in your workshop

★ *Send for it today and ask us for a free demonstration*

LE BAS TUBE COMPANY LIMITED

CITY WALL HOUSE · 129 FINSBURY PAVEMENT · LONDON E.C.2
Telephone: MONarch 8822 · Telegrams: Lebasco, Avenue, London
LONDON · MANCHESTER · GLASGOW · BELFAST

DENSO *prevents* CORROSION

Whatever the conditions, pipes—structural steelwork—all metal surfaces can be protected by Denso Tape . . . above ground, below ground or under water. . . .

Corrosion prevention by the appropriate Denso method is complete and permanent.

Consult the people whose lifelong experience is relied on by Public Authorities and Industry alike—wherever the need arises for protection against corrosion.

VISIT OUR STAND No. 28, CORROSION EXHIBITION, Royal Horticultural Society's Old Hall, London, S.W.1 - - - OCTOBER 15th-17th, 1957

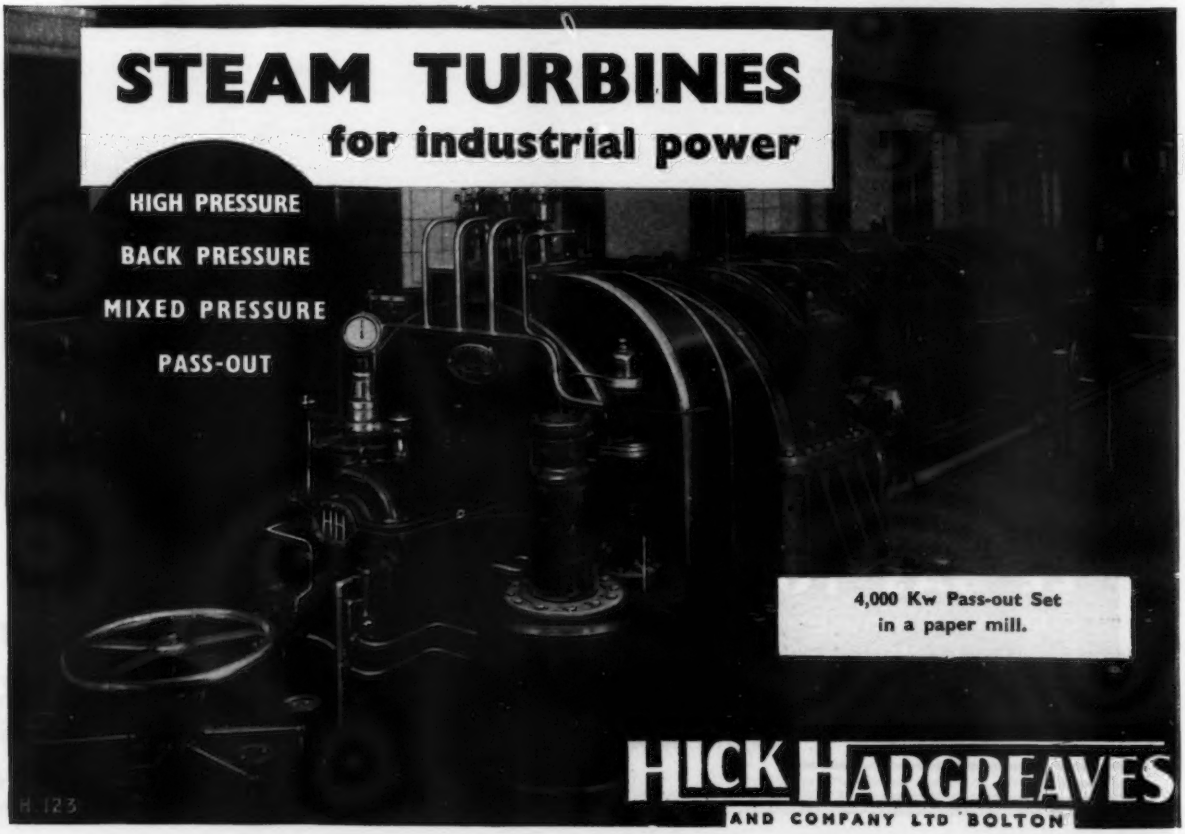
Technical information from :-

WINN & COALES LTD.,
DENSO HOUSE, CHAPEL ROAD,
LONDON, S.E.27.
Tel : GIPsy Hill 4247 (PBX).
'Grams : Denselte, Westnor, London.

DENSO REGD. ANTI-CORROSION PRODUCTS

STEAM TURBINES
for industrial power

HIGH PRESSURE
BACK PRESSURE
MIXED PRESSURE
PASS-OUT



4,000 Kw Pass-out Set
in a paper mill.

H 123

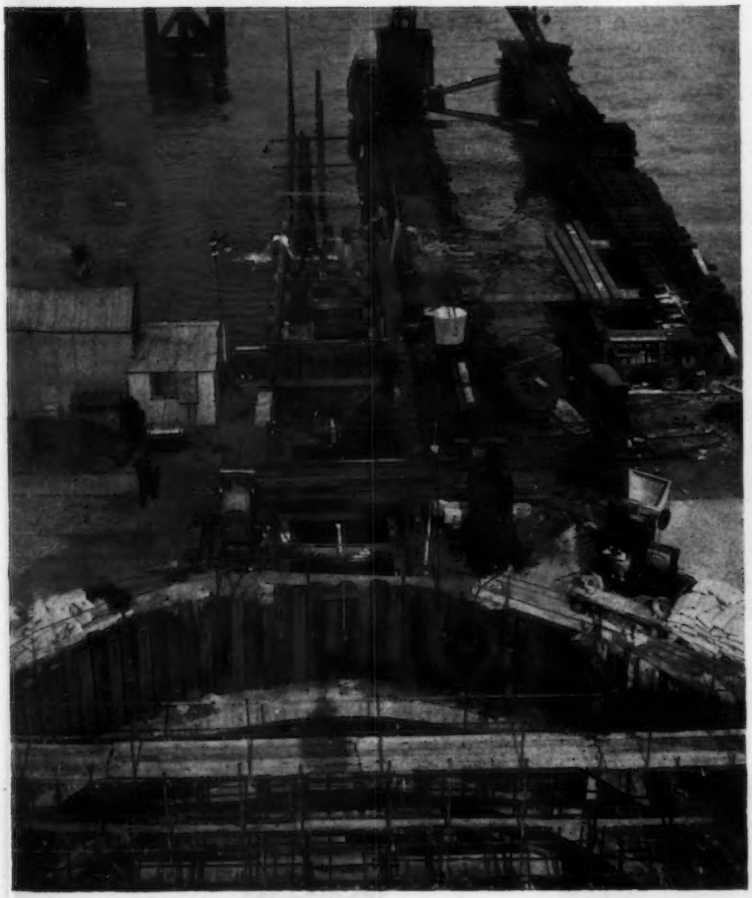
HICK HARGREAVES
AND COMPANY LTD BOLTON

3 ST. JAMES'S SQ. S.W.1 D&C TRAFALGAR 7833

THE
DEMOLITION & CONSTRUCTION
COMPANY LIMITED

Civil Engineering, Building, and Public Works Contractors

REBUILDING OF COMPLETE GASWORKS MODERNIZATION AND EXTENSIONS . . .



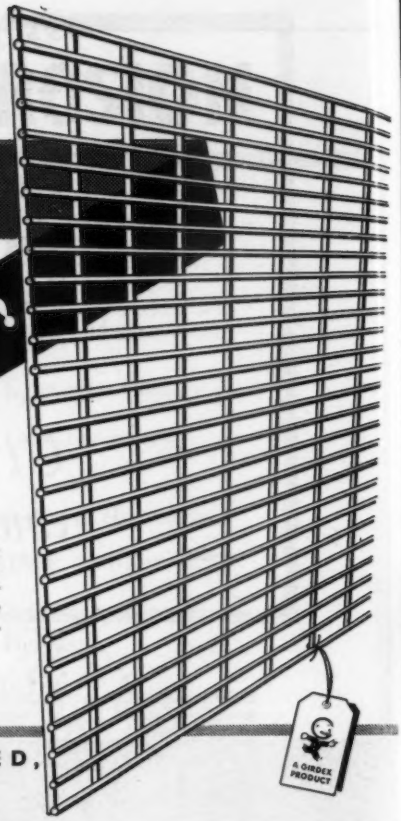
Construction of river water intake into the Thames for cooling water supply for the **South Eastern Gas Board.** *Also circular steel sheet pile cofferdam with* in situ *circular concrete walings avoiding the use of struts. Excavated for pump-house to a depth of 50 feet.*

FWS

It's a perfect screen!

. . . perfect for the grading and screening of coal, coke, stone, gravel, granite or sand.

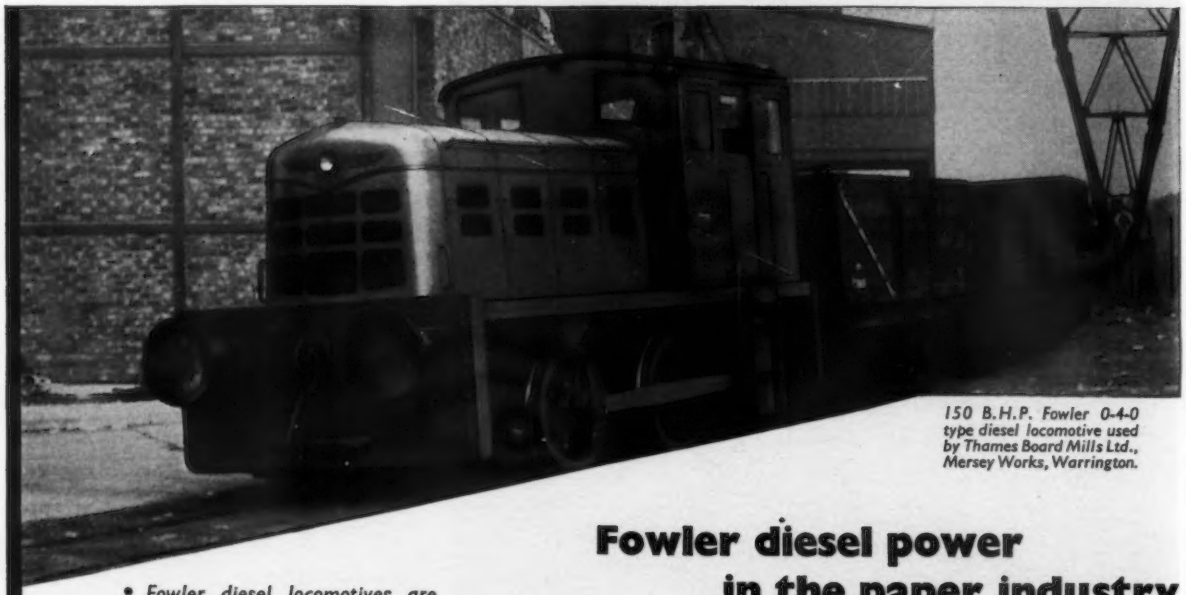
Where unvarying dimension of aperture is important, where long-term resistance to abrasion is a "must", Weld-fabric is essential. Constructed of high-specification steel, rigid and durable, this mesh is virtually indestructible, whatever the material to be handled.



GIRDEX

For screens, graders, guards, partitions, storage racks, switchgear enclosures, Weld-fabric makes light of heavy duty; year after year after year.

GIRDEX ENGINEERING COMPANY LIMITED,
WESTON LANE, TYSELEY, BIRMINGHAM, 11
Tel: ACOcks Green 2205 Grams: Girdexpres



150 B.H.P. Fowler 0-4-0 type diesel locomotive used by Thames Board Mills Ltd., Mersey Works, Warrington.

Fowler diesel power in the paper industry

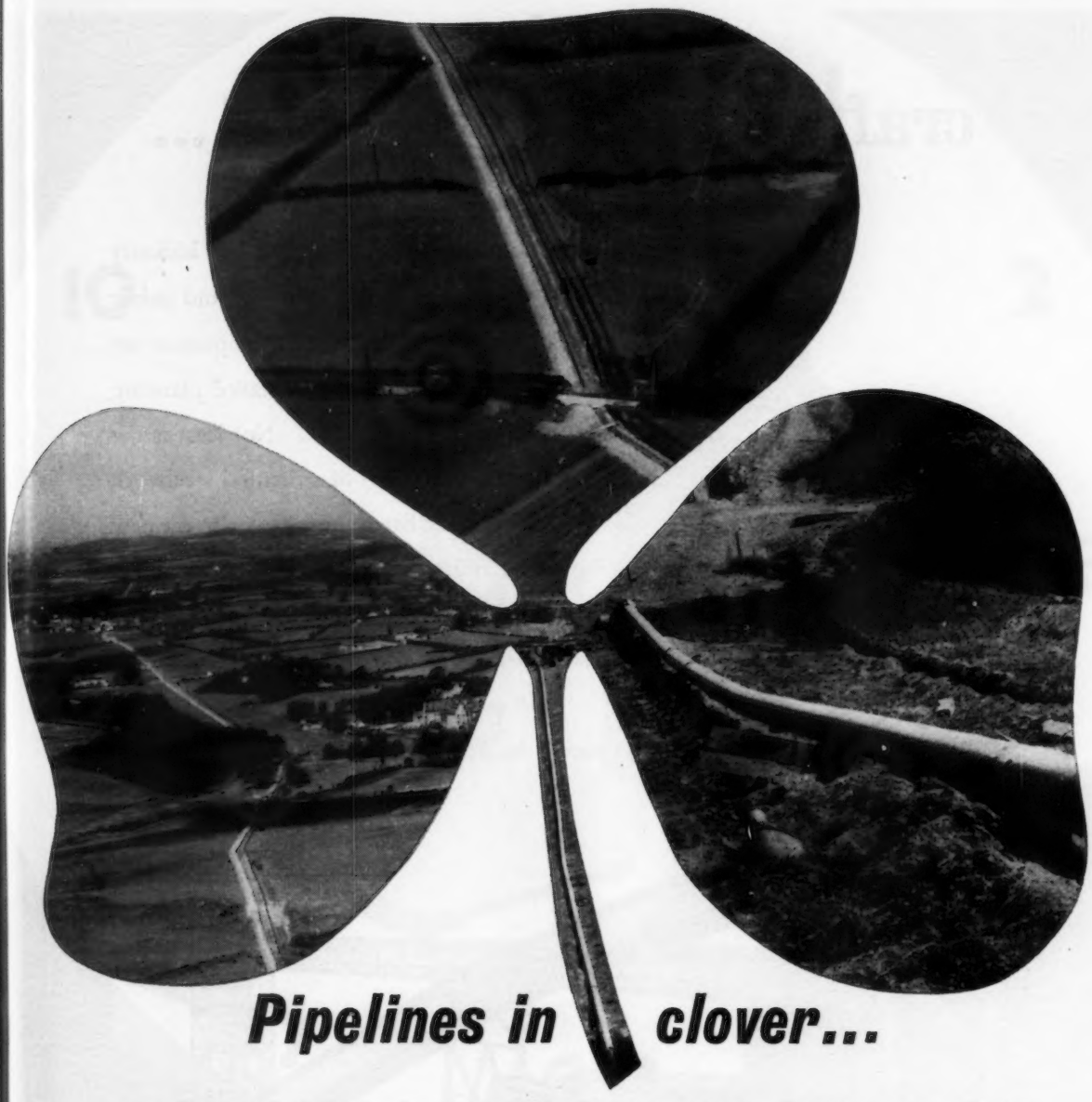
- *Fowler diesel locomotives are ideal for all industrial purposes, general or specialised.*
- *Low fuel consumption and high performance for economy.*
- *Sturdy construction and simple controls for reliability.*

Also in use in 42 other major industrial undertakings in Great Britain

John Fowler & Co. (Leeds) Ltd., Leeds 10
Telephone: Leeds 30731

FOWLER

Products of the Marshall Organisation, Gainsborough, England.



Pipelines in clover...

A pipeline wrapped in Fibreglass has nothing to worry about — because asphaltic or coal-tar enamel strengthened with Fibreglass pipewrap has *maximum* resistance to corrosion, soil stress and backfill damage.

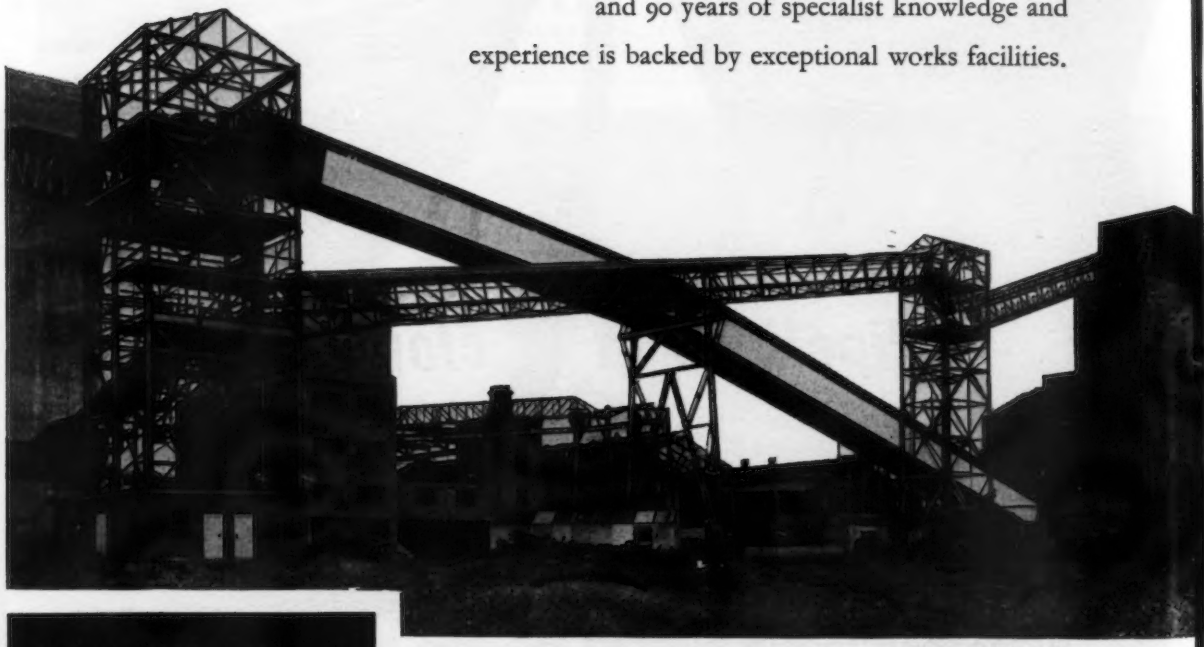
Fibreglass reinforced tissue is specifically designed for high-speed machine application to oil and other pipelines. It offers unequalled porosity characteristics which give an even and immediate bleed-through of enamel. Fibreglass reinforced tissue does not lie on the surface of the enamel, but is positioned in the body of the finished coating. The special binders developed by Fibreglass in parallel-reinforced pipewrap tissue not only help to provide extremely high tear and tensile strength, but will withstand immersion under load in hot enamel at over 500 degrees Fahrenheit.

...are wrapped in FIBREGLASS TRADE MARK

FIBREGLASS LTD., ST. HELENS, LANCASHIRE · ST. HELENS 4224

craftsmanship in steel...

Developments now taking place within the Gas Industry are designed to give benefits to industrial and public consumers alike. Long before these developments are complete and the benefits realised, detailed planning is called for in a multitude of ways. Not least is the supply and fabrication of structural steelwork and this has been Walker Bros. contribution to the new gas-making plant at the Walsall Works of the West Midlands Gas Board. We are highly organised to tackle any structural steelwork problem, large or small, and 90 years of specialist knowledge and experience is backed by exceptional works facilities.



Photograph by kind permission of Contractor Woodall-Duckham Construction Co., L

WALKER BROS
LIMITED
Structural Engineers

if it can be built in steel—we can build it

WALSALL · STAFFS · TELEPHONE : WALSALL 313
London Office: 66 Victoria Street, S.W.1 · Telephone: VICtoria 39

ESTABLISHED 1867

Electrolux is built for non-stop service . . .

Like a watch, Electrolux Gas Refrigerators are never idle. They give a non-stop 24 hour service, day and night, month after month, year after year. No easy task. But then, Electrolux Gas Refrigerators are built to last. Every time you sell an Electrolux, you can be sure that your customer will get many years of trouble-free service. There's no short-cut to experience — and there are over 30 years of manufacturing experience behind Electrolux Gas Refrigerators.

ELECTROLUX
THE FLAME THAT FREEZES

ELECTROLUX LIMITED, 153/5 REGENT STREET, LONDON, W.1.

Some pipes need

CATHODIC PROTECTION

Consult MAPEL for

- ★ Surveys, Design and Specification of Equipment
- ★ Supply of materials
- ★ Verification of the complete protection

of

- ★ Pipelines and other steel structures
- ★ Steel jetties and steel piling
- ★ Oil tankers against internal and external corrosion
- ★ Steel tanks

Note: MAPEL also provides a comprehensive Welding Instruction and Inspection Service and Leak Detection.

MAPEL

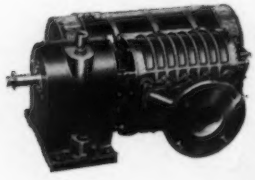
METAL AND PIPELINE ENDURANCE LIMITED

ARTILLERY MANSIONS, VICTORIA STREET, LONDON, S.W.1.

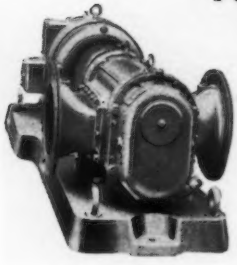
Telephone: ABBey 6056. Telegrams: Metaldure, Sowest, London.

and at **WOOLMER GREEN, NEWCASTLE-ON-TYNE** and **NEWTON ABBOT.** Continental Agencies.

Godfrey Industrial Equipment

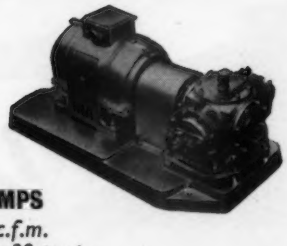


Positive Displacement



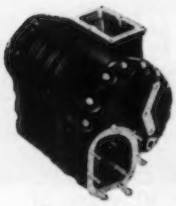
BLOWERS
VACUUM PUMPS
GAS BOOSTERS
SUPERCHARGERS

Oil free air or gas - flows up to 3,000 c.f.m. at pressures up to 10 p.s.i. - higher flows and pressures with multiple installations; for vacuum pumps, flows up to 3,000 c.f.m. at intake depressions up to 15" hg.



DIAPHRAGM PUMPS
Flows up to 1.25 c.f.m. at pressures up to 20 p.s.i.

RELIEF VALVES
2" and 4" bore.



ALL UNITS CAN BE SUPPLIED WITH MOTORS ON BASEPLATES

GODFREY
SIR GEORGE GODFREY & PARTNERS (1938) LTD.

SIR GEORGE GODFREY & PARTNERS (INDUSTRIAL) LTD

Hanworth, Middlesex. Telephone: FELtham 3291. Cables: Godfrepart, London

ASSOCIATED COMPANIES IN MONTREAL, JOHANNESBURG AND MELBOURNE

Initially

The name's the same but . . .

the 'T' now stands for THERMOPLASTICS

To enable the whole resources of our 10 factories to provide a greater service to industry, 'BTR' have withdrawn from tyre manufacture to concentrate on the widest range of thermoplastic and rubber products.
Hence the change of name from British Tyre & Rubber Co. Ltd to BTR INDUSTRIES LIMITED. The well-known BTR trademark will remain the same to identify the great variety and the unvarying quality of the products which play so vital a part in so many industries

The BTR Group includes:

Silvertown Rubber Co. Ltd
The Palmer Tyre Limited
British Moulded Hose Company Ltd
C. W. Randall & Co. Ltd
A. G. Spalding & Bros. Ltd

BTR Industries Ltd

BTR

BRITISH THERMOPLASTICS AND RUBBER MANUFACTURERS

HERGA HOUSE, VINCENT SQUARE, LONDON S.W.1

D1368

B

Cochranes

Coast-wise steamers load here for delivery to ports all around the British Isles, including Northern Ireland.

SPUN IRON PIPES & FLEXIBLE JOINTS

Cochranes Screwed-Gland Flexible Joint: up to 10" diameter.

Cochranes Bolted-Gland Flexible Joint: 4" diameter and above.

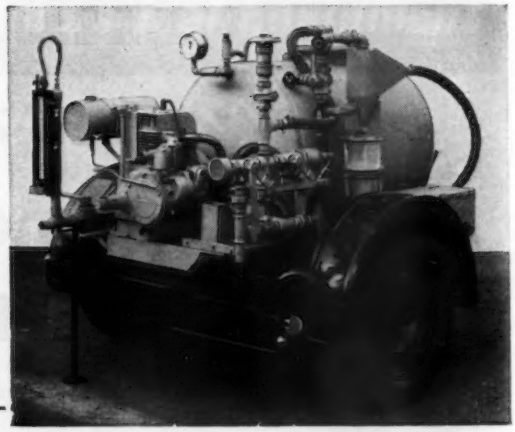
All Cochranes Spun Iron Pipes are works hydraulically proof tested to 500lb. per square inch.

Cochranes (Middlesbro') Foundry Limited, Ormesby Ironworks, Middlesbrough

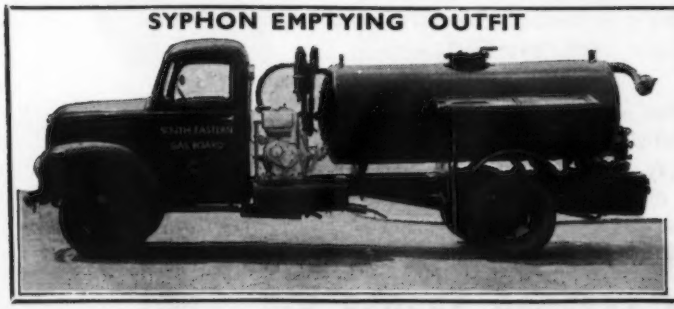
CLEANING BLOCKED SERVICE PIPES METHODS REVOLUTIONISED BY

ALLAN TAYLOR SERVICE PIPE CLEANING OUTFIT

The 75 gallon Allan Taylor pressure/vacuum service cleaning equipment complete with exhauster which can be used for vacuum or pressure. Normally used as a trailer unit and towed by a 10 cwt. van. Visible in the photograph (*right*) are the cyclone and test bar. This additional equipment enables the operator to make pressure tests before and after cleaning the service pipe, the test taps passing 50 cu. ft. or 100 cu. ft. as required. By using the Cyclone the dust drawn from the service pipe is deposited in the sight glass for inspection and can then pass into the easily removable container below. The arrangement further enables the operator at the machine to determine whether or not there has been any success with a cleaning operation. The extractor also prevents the greater part of the rust dust from entering the 75 gallon cylinder.



SYPHON EMPTYING OUTFIT



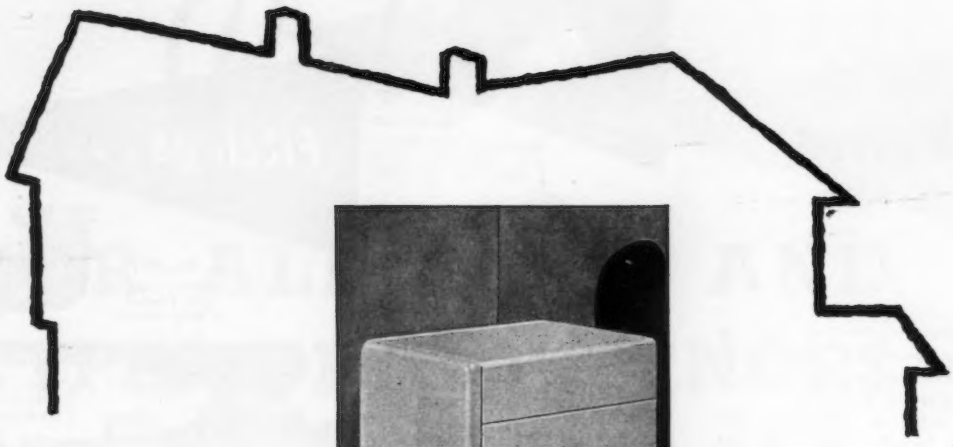
The Vacuum Syphon Emptying Outfit illustrated is mounted on a 4 ton **Thames** Chassis. A 600 gallon galvanised tank is fitted. A rotary type exhauster is driven by a 4 b.h.p. four-stroke air cooled engine, mounted on a sub-frame behind the cab. The tank is fitted with a flame-proof vent and the outfit can be used for high or low pressure syphon emptying. A large manhole at the rear allows the tank to be cleaned easily. A sight glass is fitted to enable the operator to know when the Syphon is emptied. Twenty-five feet of 1½ in. suction hose is supplied with the outfit. The outfit can be used for vacuum or pressure working.

ALLAN TAYLOR (ENGINEERS) LTD.

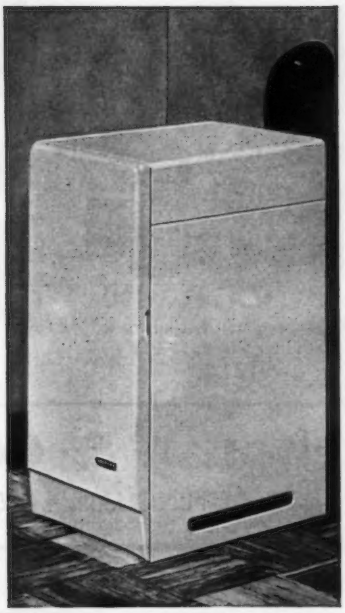
WANDSWORTH HIGH STREET, LONDON, S.W.18

Telephone : VANdyke 7222 (ten lines)

ALLAN TAYLOR



There is a ready market for gas-fired boilers in modern homes



The 'Diplomat' 30, one of the latest additions to the 'Potterton' range of gas-fired boilers.

The merits and advantages of 'Diplomat' Gas-Fired Boilers have been widely advertised for many months in the Trade, Technical and Consumer Press, and, in many areas, gas tariffs have been introduced which are very attractive to users of such appliances.

More and more people are beginning to *want* automatic, trouble-free hot water supply or central heating in their homes, and the sight of a 'Diplomat' is often enough to convince them.

The market is there—it only needs tapping.

'Diplomat' *GAS-FIRED BOILERS*

MODELS OF SELF-CONTROL

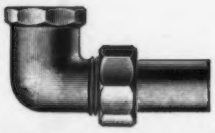
POTTERTON DIVISION, Thomas De La Rue & Co. Ltd., 20/30 Buckhold Road, London, S.W.18.

DL736

Modern Gas Fittings . . .

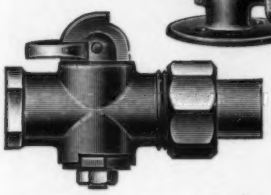
No. 3/9138D
Hot pressed. Floor Pattern with Drop Head Cock ¼" Iron or ½" Brass Inlet.

No. 9077
Elbow Union Hot Pressed. ½" Iron × Lead.

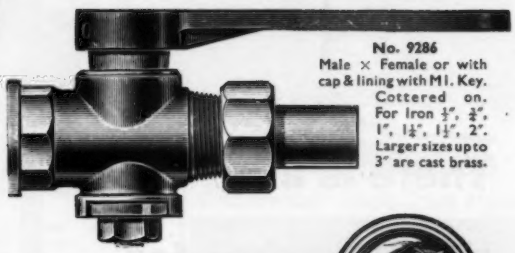


★ Union Joints and Cocks of every description. All types of Gas Fittings from Hot Pressings Castings and Brass Rod.
The name of Whitehouse has been famous since 1872 for accuracy and fine finish.

You are invited to send for our illustrated catalogues.



No. 9291 Hot Pressed. Drop Head For Iron ¼", ⅜", ½", ¾".

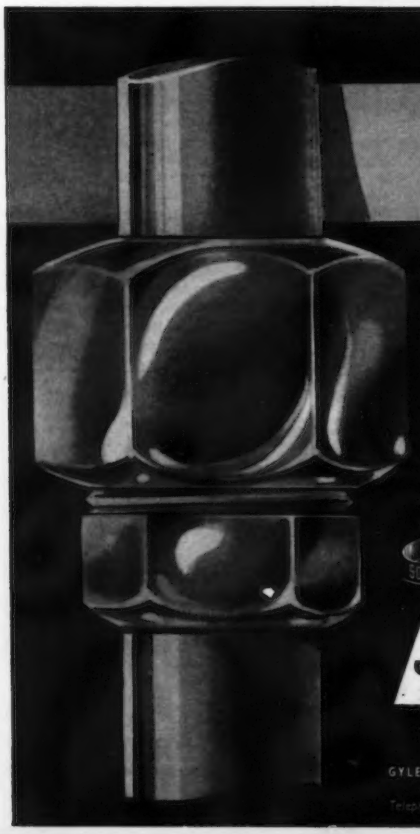


No. 9286
Male × Female or with cap & lining with M.I. Key. Cottered on. For Iron ½", ¾", 1", 1¼", 1½", 2". Larger sizes up to 3" are cast brass.

TRADE MARK

Wm. Whitehouse & Co. Ltd.

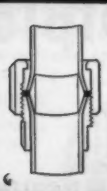
EMPIRE WORKS, BRUETON ST., BIRMINGHAM, 4. *(Established 1872)*



A really permanent joint

You can put implicit trust in a SECUREX joint—it's quickly fixed (two minutes per joint, on average) and, once in position, resists pressure, side strain and temperature variations throughout the life of the installation. SECUREX Solderless Compression Joints are precision built in many different sizes—full particulars gladly sent on request.

SECUREX
SOLDERLESS COMPRESSION JOINTS



JAMES H. LAMONT
AND COMPANY LIMITED
ENGINEERS—BRASSFOUNDERS

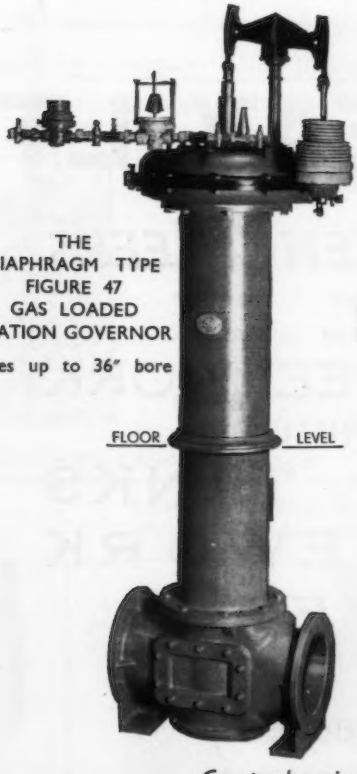
GYLEMUIR WORKS, CORSTORPHINE, EDINBURGH, 12, SCOTLAND
Telephone: Corstorphine 224[illegible] Telegrams: [illegible] Edinburgh

LONDON OFFICE
NORFOLK HOUSE, LAURENCE POUNTNEY HILL, E.C.4
Telephone: Mansion House 5706 Telegrams: [illegible] London

Peebles

FOR ALL SIZES AND TYPES OF GOVERNORS

DIAPHRAGM CONTROL VALVES, AUTOMATIC BY-PASS VALVES, METER PROTECTION VALVES, HOLDER FILLING VALVES, THERMO RELAY VALVES, CUT-OFF VALVES, GAS METERS



THE DIAPHRAGM TYPE FIGURE 47 GAS LOADED STATION GOVERNOR

Sizes up to 36" bore

SINGLE-BEAT VALVE GOVERNOR FIGURE 98 (BALANCED) PATTERN

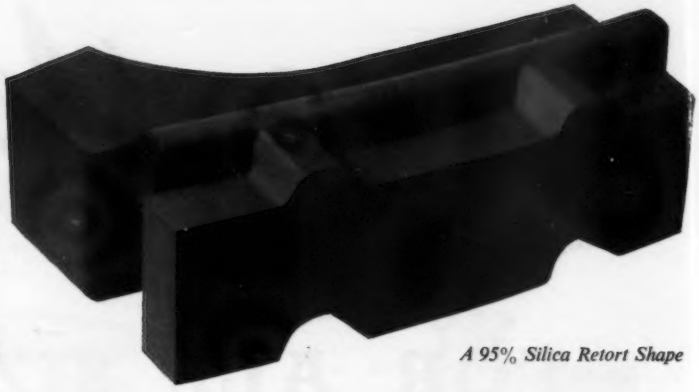
THE WEIGHT-LOADED FIGURE 109 DOUBLE-BEAT VALVE GOVERNOR

Comprehensive list of products on application

TAY WORKS, WEST BOWLING GREEN STREET,

'Phones: LEITH 36544 & 35069. EDINBURGH, 6 'Grams: "TANGENT, EDINBURGH."

New Processes
Greater Demands
Higher Standards



A 95% Silica Retort Shape

DERBYSHIRE SILICA REFRACTORIES

Peaksil 1 recommended for carbonising plants and gas retort construction, is a 95% Silica refractory which retains its strength and rigidity up to very high temperature.

Derbyshire "S" and "D.S.F." (90% Silica)

Refractories for all purposes including Vertical and Horizontal Retorts, Soakers, Puddling Furnaces, Reheating and Annealing Furnaces, Forge Furnaces, Checkers, Cupolas and Glass Furnaces.

Other D.S.F. products include—

FRISIL (Sillimanite) and DOME INSULATION (Diatomite)

DSF
DERBYSHIRE SILICA FIREBRICK CO., LTD.
FRIDEN · HARTINGTON · NEAR BUXTON · DERBYSHIRE
Grams: Silica, Friden, Hartington. 'Phone: Youlgrave 271 (3 lines)

E. C. & J. KEAY LTD.

CONSTRUCTIONAL ENGINEERS

STRUCTURAL STEELWORK
OF EVERY DESCRIPTION
BRIDGES • TANKS
STEEL PLATEWORK
GASHOLDERS
ETC., ETC.

Supplied & Erected

HEAD OFFICE: "RUNNYMEDE"
HENLEY-IN-ARDEN
SOLIHULL, WARWICKSHIRE.
Telephone: HENLEY-IN-ARDEN 211

WORKS: JAMES BRIDGE
DARLASTON
STAFFS.

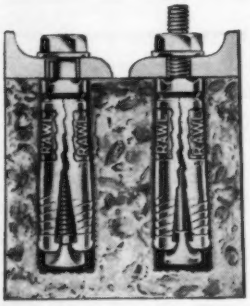
BRANCH OFFICES:
LONDON
25 VICTORIA ST., S.W.1
and SOUTHAMPTON

A RAWLPLUG HEAVY DUTY FIXING DEVICE

RAWLBOLTS

There is no waiting for cement to harden when you use Rawlbolts. The holes are drilled with a Rawltool to the exact size, the Rawlbolts dropped in and after the machine has been positioned the bolts are tightened. The expansion of the members locks the bolts in the holes. They cannot work loose through vibration or shock. The machine can be put into operation immediately.

Rawlbolts have earned a sterling reputation for strength and reliability throughout the world—they are used by the million every month. Rawlbolts grip by *expansion*—their strength as a fixing is based on the enormous compressive strength of concrete itself.



RAWLBOLTS ARE MADE IN TWO TYPES

For fixing heavy machinery to floors there is the Loose Bolt type of Rawlbolt which enables the machine to be slid into position after the Rawlbolt has been inserted. For wall fixings use the Bolt Projecting type which will position the fixing before tightening up.

Please write for Chart and descriptive literature.

Tools that save time For hole boring there is a big range of high efficiency Rawlplug tools for use by hand, electric and air power.

RAWLDRILLS

For hand boring for Rawlbolt sizes A to G.

B545

STARDRILLS

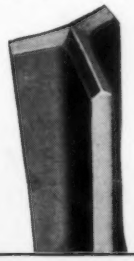
For hand boring for all Rawlbolt sizes.

DURIUM MASONRY DRILLS

For use in hand and electric drills for Rawlbolt sizes C to G.

TRIFORM DRILLS

For use in electric hammers for Rawlbolts sizes C to K.



DURIUM HAMMER DRILLS

For use in electric hammers for Rawlbolt sizes C to J.

P. H. BITS

For use in pneumatic hammers for Rawlbolt sizes E to K.

RAWLPLUG CO. LTD., CROMWELL ROAD, LONDON, S.W.7. | *THE WORLD'S LARGEST MANUFACTURERS OF FIXING DEVICES.*

Bind your JOURNAL each week

Gold lettered on the spine complete with instruction sheet.

No loose copies to be mislaid

We offer Journal readers a simple method of temporarily binding their copies as received week by week. No time lost searching for a particular issue; Journals removed and replaced in a few seconds. Designed to hold 13 issues, and whether completely or only partially filled the book effect is always maintained.

Price 12/6 each plus 9d. postage.

Obtainable from:
WALTER KING, Ltd., 11, Bolt Court, Fleet St., London, E.C.4

Super Refractories:
SILLIMANITE, MULLITE, ETC.
—
INSULATING FIREBRICKS

Products Include:
FIREBRICKS Grades E & F
ALUMINOUS FIREBRICKS Grades G & H

WILLIAMSON, CLIFF LTD.
STAMFORD

London Office: **68, VICTORIA STREET, LONDON, S.W.1**

Telephones: **STAMFORD 3316** **London: VIC. 5351**

MANUFACTURERS OF REFRACTORIES TO STANDARD SPECIFICATIONS FOR THE GAS & COKING INDUSTRIES

FOR USE IN

VERTICAL & HORIZONTAL GAS RETORT SETTINGS ; WATER GAS PLANT INSTALLATIONS ; COMPLETE GASIFICATION PLANTS ; OIL GASIFICATION PLANTS ; COKE OVENS ; BOILER SETTINGS, ETC

INDEX TO 'JOURNAL' ADVERTISERS

PAGE

A

A.C.E. Machinery Ltd. ... ...
AEI Lamp & Lighting Co. Ltd. ... ...
A.P.V. Company Ltd. ... ...
Acme Wringers Ltd. ... ...
Aerogen Co. Ltd. ... ...
Alder & Mackay Ltd. ... ...
Aldridge & Ranken Ltd. ... ...
Allen Taylor (Engineers) Ltd. 120
Aquafont Industries Ltd. ... ...
Ascot Gas Water Heaters Ltd. ... ...
Ashmore, Benson, Pease & Co. ... ...
Ashworth & Parker Ltd. ... ...
Aspinall's (Paints) Ltd. ... ...
Associated Lead Manufacturers Ltd. ... ...
Atlas Preservative Co. Ltd. ... ...
Audley Engineering Co. Ltd. ... ...
Automotive Products Ltd. ... ...
Averill, C. R., Ltd. ... ...

B

B.S.A. Tools Ltd. ... ... Cover IV
B.T.R. Industries Ltd. 119
Bale & Church Ltd. 160
Balfour, Henry, & Co. Ltd. ... ...
Bells Asbestos & Engineering Co., Ltd. ...
Berry's Foundry (1949) Ltd. ... ...
Birtley Engineering Ltd. ... ...
Blakeley, Firth, Sons & Co. Ltd. ... ...
Borchardt, F.A., Ltd. ... ...
Bratt Colbran Ltd. ... ...
Bray, George, & Co. Ltd. ... ...
Bristol Pneumatic Tools Ltd. ... ...
British Carbo-Norit Union Ltd. 162
British Gas Purifying Materials Co. ... ...
British Jeffrey-Diamond Ltd. ... ...
British Paints Ltd. ... ...
British Rototherm Co. Ltd. ... ...
British Thomson Houston Ltd. 128
Broadbent, Thomas, & Sons Ltd. ... ...
Brookhirst Switchgear Ltd. ... ...
Broom & Wade Ltd. ... ...
Brown, J., & Co. Ltd. ... ...
Bugden, Thos., & Co. ... ...

C

Cambridge Instrument Co. Ltd. ... ...
Cannon (G.A.) Ltd. ... ...
Cementation Co. Ltd. 158
Chemical Engineering Wiltons Ltd. ... ...
Cinema-Television Ltd. ... ...
Clapham Bros. Ltd. ... ...
Clayton, Son & Co. Ltd. ... ...
Clensol Ltd. ... ... Facing p. 139
Cleckheaton Engineering Co., Ltd. 160
Clifford Engineering Co. Ltd. ... ...
Cochrane (Middlesbro') Foundry Ltd. 120
Cohen, George, Sons & Co. Ltd. ... ...
Concrete Proofing Co. Ltd. 162
Consett Iron Co. Ltd. ... ...
Contracts ... ...
Cori, Robert, & Son Ltd. 143
County Chemical Co., Ltd. ... ...
Crane Ltd. 107
Crone & Taylor Ltd. ... ...
Crossley Bros. ... ...
Crosthwaite Furnaces & Scriven Mach. Tools Ltd. ...
Cutler, Samuel, & Sons Ltd. ... ...
Cuxson, Gerrard & Co. Ltd. ... ...

D

Davenport Engineering Co. Ltd. ... ...
Davey, Paxman & Co. Ltd. ... ...
Davies Bros. (Denton) Ltd. ... ...
De la Rue, Thomas, & Co. Ltd. (Gas Group) ... 121
Demolition & Construction Co. Ltd. 113
Dempster, R. & J., Ltd. ... ... Cover I
Dempster, Robert, & Sons Ltd. ... ...
Denison & Son Ltd. ... ...
Derbyshire Silica Firebrick Co. Ltd. 124
Diaphragm & General Leather Co. Ltd. ... ...
Dick, R. & J. Ltd. ... ...
Donkin (The Bryan) Co. Ltd. ... ... Cover II
Douglas, Wm., & Sons Ltd. ... ...
Drakes Ltd. ... ...
Dresser Manufactures (England) Ltd. ... ...
Drew, H. B., Ltd. ... ...
Drummond Patents Ltd. ... ...

E

Eagre Construction Co. Ltd. ... ...
Electric Construction Co. Ltd. ... ...
Electroflo Meters Co. Ltd. ... ...
Electrolux Ltd. 117
Elliott Bros. (London) Ltd. ... ...
Ellison, George, Ltd. ... ...
Ether Ltd. ... ...
Evans (Joseph) & Sons (Wolverhampton) Ltd. ...
Evered & Co. Ltd. ... ...
Ewart & Sons Ltd. ... ...
Ewart Chainbelt Co. Ltd. ... ...

F

Fibreglass Ltd. 115
Flavel, S., & Co. Ltd. ... ...
Fluidrive Engineering Co. Ltd. ... ...
Ford Motor Co. Ltd. ... ...
Fowler, John, & Co. (Leeds) Ltd. 114
Frankie Compressed Pile Co., Ltd. ... ...

PAGE

G

Gas Purification Ltd. 160
General Electric Co. Ltd. ... ...
Gibbons Bros. Ltd. 108
Girdex Engineering Co. Ltd. 114
Glover, George, & Co. Ltd. ... ...
Glover, Thomas, & Co. Ltd. ... ...
Godfrey, Sir George, & Partners (Industrial) ... 118
Goodall Clayton & Co. Ltd. ... ...
Goodyear Industrial Rubber Products Ltd. ... 146
Grant Lyon & Co. Ltd. ... ...
Graphite Products Ltd. ... ...
Greenwood & Batley ... ...
Green & Boulding Ltd. ... ...
Gunite Construction Co. Ltd ... ...

H

Hackbridge & Hewittic Electrical Co. Ltd. ... ...
Hamilton, A. H., & Co. Ltd. ... ...
Harbour & General Works Ltd. ... ...
Hardman & Holden Ltd. 104
Harris & Pearson Ltd. ... ...
Harris Engineering Co. Ltd. ... ...
Harrisons (London) Ltd. ... ...
Harvey, G. A., & Co. (London) Ltd. ... ...
Hick Hargreaves & Co. Ltd. 112
Hilmor Ltd. ... ...
Holman, Michell & Co. Ltd. ... ...
Holmes, W. C., & Co. Ltd. 161
Holst & Co. Ltd. ... ...
Hopkinsons Ltd. ... ...
Horseley Bridge & Thomas Piggott Ltd. ... ...
Horstmann Gear Co. Ltd. ... ...
Hudswell Clarke & Co. Ltd. ... ...
Hughes, F. A., & Co. Ltd. ... ...
Humphreys & Glasgow Ltd. ... ...

I

I.C.I. Ltd. (Metals Division) ... ...
Ideal Boilers & Radiators Ltd. ... ...
Ingham, John, & Sons Ltd. ... ...

J

Jeavons, E. E., & Co. Ltd. ... ...
Jeavons Engineering Co. ... ...
Jenkins, W. J., & Co. Ltd. ... ...
Johnson, C. H., (Machinery) Ltd. ... ...
Joy-Sullivan Ltd. ... ...

K

Keay, E. C. & J., Ltd. 124
Kennedy, Allan, & Co. Ltd. ... ...
Kings Patent Agency Ltd. 160
King, Walter, Ltd. 126, 160, 162
Kirkham, Hulett & Chandler Ltd. 158

L

Lafarge Aluminous Cement Co. Ltd. ... ...
Land & Marine Contractors Ltd. ... ...
Lamont, James H., & Co. Ltd. 122
Le Bas Tube Co. Ltd. 111
Lee, Howl & Co. Ltd. ... ...
Lincoln Electric Co. Ltd. 105
Lind, Peter, Ltd. ... ...
Lionweld Ltd. 157

M

Macpherson, Donald, & Co. Ltd. ... ...
Magnetic Valve Co. Ltd. 109
Main, R. & A., Ltd 154, 155
Major Robinson & Co. Ltd. ... ...
Marsh Bros. (Electric) Ltd. ... ...
McNeill, F., & Co. Ltd. ... ...
Meltham Silica Fire Brick Co. Ltd. ... ...
Metal & Pipeline Endurance Ltd. 118
Meters Ltd. ... ...
Metropolitan-Vickers Electrical Co. Ltd. ... ...
Meynell & Sons Ltd ... ...
Midland Iron & Hardware Co. (Cradley Heath) Ltd. ... 160
Milne (Edinburgh) Ltd. ... ... Cover II
Mint, Birmingham Ltd. 110
Mitchell Engineering Ltd. ... ...
Mitchell, H., & Co. ... ...
Moler Products Ltd. ... ...
Monk, A., & Co. Ltd. ... ...

N

National Benzole Co. ... ...
Nelson, W. & H., Ltd. ... ...
Neville, J. C., Ltd. ... ...
New Conveyor Co. Ltd. ... ...
Newton Chambers & Co. Ltd. ... ...
Norwest Construction Co. Ltd ... ...

O

Oxley Engineering Co. Ltd. ... ...

PAGE

P

Parkinson & Cowan (Gas Meters) Ltd. 130
Parkinson Stove Co. Ltd. ... ...
Pass, E., & Co. Ltd. ... ...
Peart, E. & Co. Ltd. ... ...
Peebles & Co. Ltd. 123
Perl Controls Ltd. ... ...
Pickles, Ayland & Co. Ltd. ... ...
Plenty & Son Ltd. ... ...
Power-Gas Corporation Ltd. ... ...
Press, William, & Son Ltd. ... ...
Procter Bros. (Wireworks) Ltd. ... ...
Pyrene Co., Ltd. 129

R

Radiant Heating Ltd. ... ...
Radiation Ltd. 144, 145
Rawlplug Co. Ltd. 125
Reavell & Co. Ltd. 106
Roberts, R. E., & Sons Ltd. ... ...
Robinson, J. H., & Co. (Liverpool) Ltd. ... ...
Rozalex Ltd. ... ...

S

Salter, T. E., Ltd. ... ...
Saunders Valve Co. Ltd. ... ...
Sawyer, Geo. E., Ltd ... ...
Scientific & Projections Ltd. ... ...
Senior Economisers Ltd. ... ...
Shaw Petrie Ltd. ... ...
Shell Chemical Co. Ltd. ... ...
Siebe Gorman & Co. Ltd. ... ...
Siemens-Schuckert (Great Britain) Ltd. ... ...
Sigma Instrument Co. Ltd. ... ...
Simon, Richard, & Sons Ltd. 106
Smith & Nephew Ltd. ... ...
Smith Meters Ltd. ... ...
Smith, Thos., & Sons (Rodley) Ltd., ...
Smith, W. H., & Co., Electrical Engineers Ltd. ...
Solus-Schall Ltd. ... ...
Spanner Boilers Ltd. ... ...
Spencer-Bonecourt-Clarkson Ltd. ... ...
Speedwell Gear Co. ... ...
Sperryn & Co. Ltd. ... ...
Stanton Ironworks Co. Ltd. ... ...
Staveley Iron & Chemical Co. Ltd. ... ...
Stein, John G., & Co. Ltd. ... ...
Stewarts & Lloyds Ltd. ... ...
Stillite Products Ltd. ... ...
Stoves Ltd. ... ...
Strachan & Henshaw Ltd. ... ...
Stringer Bros. ... ...
Sugg, Wm., & Co. Ltd. ... ...
Sutcliffe Speakman & Co. Ltd. ... ...
Sutherland, A. G., Ltd. ... ...

T

T & T Works Ltd. 110
Tangyes Ltd. ... ...
Teddington Refrigeration Controls Ltd. ... ...
Thorp, Thomas, & Co. Ltd. ... ...
Turners Asbestos Cement Co. Ltd. ... ...

U

Underpressure Engineering Co. Ltd. ... ...
United Gas Industries Ltd. ... ...
United Kingdom Construction and Engineering Co. Ltd. ...

V

Vaughan, Edgar, & Co. Ltd. ... ...
Vauxhall Motors Ltd. ... ...
Victaulic Co., Ltd. ... ...
Visco Engineering Co. Ltd. ... ...

W

Wailes Dove Bitumastic Ltd. ... ...
Wakelin, F. H., Ltd. ... ...
Walker Bros. Ltd. 116
Walker, C. & W., Ltd. ... ...
Walkers (Century Oils) Ltd. ... ...
Waller, George, & Sons Ltd. ... ...
Walter King Ltd. ... ...
Ward, Thos. W., Ltd. ... ...
Weir, G. & J., Ltd. ... ...
Wellington Tube Works Ltd. ... ...
West's Gas Improvement Co. Ltd. ... Cover III
West's Piling & Construction Co. ... ...
Westwood & Wrights Ltd. ... ...
Whessoe Ltd. 103
Whitehouse, Wm., & Co. Ltd. 122
Whitley Moran & Co. Ltd. ... ...
Whitlock Bros. Ltd. ... ...
Wilkes, A. H., & Co. Ltd. ... ...
Williamson, Cliff, Ltd. 126
Wilson, George, Gas Meters Ltd. ... ...
Winn & Coales Ltd. 112
Woodall-Duckham Construction Co. Ltd. Facing p. 138
Wood, Hugh, & Co. Ltd. ... ...

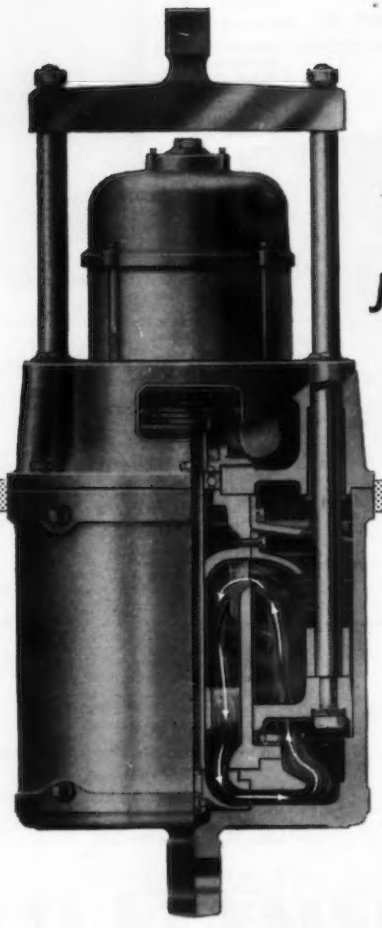
Y

Yorkshire Copper Works Ltd. ... ...

Agencies ... ...
Appointments Vacant 160
Appointments Wanted ... ...
Books ... ...
Contracts Open ... ...
Educational ... ...
Fellowship ... ...
Patents 160
Plant &c. For Sale 160
Plant Wanted. ... ...
Publications ... ...
Publishers Notice ... ...

B T-H

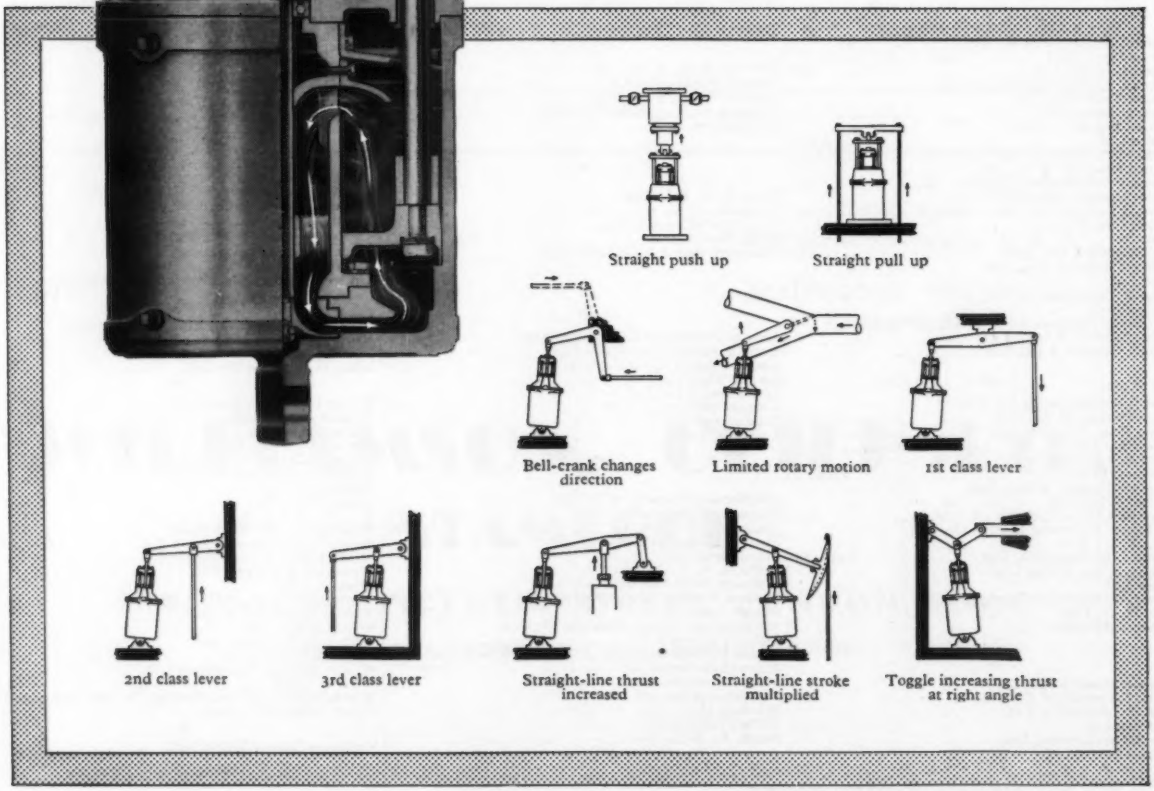
Electro-Hydraulic Thrustors



Smooth straight-line constant-pressure thrust from start to finish of stroke.
From 40-lb. thrust, 2-in. stroke to 800-lb. thrust, 12-in. stroke.

Just switch on—

the thrustor does the work



BRITISH THOMSON-HOUSTON

THE BRITISH THOMSON-HOUSTON COMPANY LIMITED · RUGBY · ENGLAND

Member of the AEI group of companies

A4888

BY APPOINTMENT TO HER MAJESTY THE QUEEN
Suppliers of Fire Extinguishers The Pyrene Company Limited

Complete Fire Safety for the GAS INDUSTRY

Advances in the production of town and industrial gases and their by-products, present ever changing fire protection problems. The Pyrene Research Division, aided by the most modern manufacturing methods, offers the Gas Industry the last word in fire extinguishing systems and equipment specially designed to meet its needs. It is important that you should know about the latest developments in Fire Safety. Send NOW for details of "Pyrene" Fire Appliances (including Installations for the protection of bulk oil storage in connection with oil-gasification) or instruct us to tell one of our Technical Representatives to call—without any obligation to you.

Pyrene TRADE MARK FIRE PROTECTION

An investment in peace of mind

THE PYRENE COMPANY LTD

Dept. G.J. 10, 9 GROSVENOR GARDENS, LONDON, S.W.1
Tel.: VICtoria 3401
Head Office and Works: BRENTFORD, MIDDLESEX
Canadian Plant: TORONTO

Gas Journal

VOL. 292 *NO. 4918* *October 16, 1957*

109TH YEAR

MANAGING DIRECTOR: Clifford A. King

EDITOR: Geoffrey W. Battison

TECHNICAL EDITOR: Charles J. P. de Winton, T.D., M.A., M.Inst. Gas E., M. Inst. F.

Published by Walter King Limited,
11, Bolt Court, Fleet St., London, E.C.4

Telephone: FLEet Street 2236-7 Telegrams: Gasking, Fleet

CONTENTS

Page

EDITORIAL COMMENT

Fuel Research in 1956 .. 131
A National Society for Clean Air? .. 132

SPECIAL ARTICLE

Transatlantic Cable. From Hilding Carlson .. 138

NEWS OF CURRENT EVENTS

Personal .. 133
Obituary .. 133
Diary .. 133
First Smoke Control Area Approved .. 134
Bradford Plans Biggest Clean Air Zone .. 134
Dumbarton Trades Fair .. 134
Fewer Firms Seek Change to Oil Fuel .. 134
Liquid Methane Importation Faces a Further Problem .. 135
S.E.G.B. Fitter Praised for Bravery .. 135
Carbon Dioxide in the Foundry .. 135
Mr. Therm with the Brewers .. 135
S.E.G.B. Control Centre Opened at Streatham .. 136
Trade News .. 153

TECHNICAL RECORD

Towards a Cheaper Therm. By J. E. Gray .. 140
The Place of the Specialised Vehicle in the Transport Fleet. By A.W. Mahony .. 147
The Importance to Sales of Quality and Consistency. By James W. Rodgers .. 150

PUBLISHERS' NOTICE, SEE PAGE 160

THERE is a degree of quality in every type of Parkinson meter which is far beyond the requirement of any customer specification

PARKINSON & COWAN GAS METERS

GM11

Gas Journal

VOLUME 292. No. 4918. OCTOBER 16, 1957. 109th YEAR

Fuel Research in 1956

TO anyone outside the world of research, in whatever subject he may be a specialist or in whatever industry he may be employed, the activities of the many research bodies in this country cannot help but be of interest. To all in the gas industry the activities of the Fuel Research Board are naturally of absorbing interest. This may be because, as a Government sponsored body, its research programme is not prejudiced by any of the motives to be found in a commercial firm with many practical aims in view. In fact it can view its research programme from a similar standpoint to that of the scientific department of a university, with the chief difference that it must be technological rather than academic.

In his latest report, the Director of the Fuel Research Board covers a large number of subjects, all of which are to a greater or lesser extent of importance to the gas industry, but perhaps the most absorbing is the account of the researches into the synthesis of oil from coal. This investigation has been going on for a number of years and consists in developing the Fischer-Tropsch synthesis so that the cost of the product can be reduced to a point where it is reasonably competitive with natural petroleum.

The latest techniques are being applied, including fluidised catalysts and the developing of a liquid phase process. By these means the volume of gases that the plant can deal with are increased and the products are richer in hydrocarbons other than methane. Work has been going on by using a pilot plant which is designed to produce 50 gal. per day. The catalyst for this process is based on iron and experiments using mill scale as a raw material for the catalyst have been successfully carried out. The chief interest in this process other than making the United Kingdom more independent of foreign supplies of oil is the possibility of applying it to other parts of the Commonwealth where abundant supplies of cheap, low grade carbonaceous material are to be found, such as the Morwell brown coal deposits in Victoria. These experiments are likely to lead to further information on the synthesis of other chemical compounds from coal.

Further research has been taking place on the chemical constitution of coal. This subject is of constant interest to the gas industry since by the study of the ultimate chemical make-up of the coal substance, new gasification processes for the production of new products can be devised. If these processes can help in reducing the cost of gas or coke production or both, the competitive position of the industry will be improved, although to many gas engineers in charge of gas making plants the direct application of this and other fundamental research of this character may be hard to detect. The report refers to the recovery of germanium from coal and describes experiments that are being carried out to study what exactly happens when it is volatilised from coal. It appears that graphite mixtures containing germanium oxide will lose all their germanium when heated in nitrogen up to 1,400°C. If coke undergoes a similar treatment 5% of the germanium content is lost at 1,100°C., and only 30% at 1,400°C. Since the coke undergoes a certain amount of oxidation, some of the germanium too may be lost for the same reason. This was demonstrated by the slow oxidation of the coke by which about 85% of the germanium was lost at 1,100°C. The importance of germanium in the electronics industry for the manufacture of transistors make its recovery of particular interest to the gas industry.

The complete gasification of coal and coke in producer plant has been studied over the past year with the object of making use of non-caking coals, especially fines, from both coal and coke.

The report points out that gases made from these sources will contribute towards reducing the cost of production of town gas, metallurgical coke and steel by supplying a cheap gas for firing gas retorts, coke ovens and the many needs for gaseous heating in the steel industry. Producer gas can also be used as a raw material in the Fischer-Tropsch synthesis. In all cases the ash content of the coal and coke fines is much higher than in the larger coal or coke, and both this and the quantity is likely to increase, by the extension of mechanical mining and the increase in coal cleaning plants which have very high ash fines as one of their waste products. To accomplish this, the slagging producer was designed and recent experiments have been carried out to improve the continuous removal of slag, the durability of the chamber lining, and the control of the coal feed. Experiments have also been carried out in the development of a producer which will gasify finely divided fuel in a bed of large coke under slagging conditions.

Temperatures up to 1,900°C. have been observed.

The difference in sulphur content between the negligible percentage of sulphur in blast furnace gas and the considerable proportion of H_2S in producer and water gases has caused experiments to be carried out to investigate the difference in conditions under which the gases are produced in each case. The effect of the proportions of air and water vapour and the effect of adding lime stone and iron to the fuel bed have been studied.

The burning of coal smokelessly in hand fired boilers, fitted with the Fuel Research Station's smoke eliminators has been studied and a census taken all over the country. About 15% of the industrial boilers in the country for which such eliminators have been designed, have been fitted. The report estimates that this comparatively small number, 1,700, should save about 100,000 tons of coal a year.

A National Society for Clean Air?

HOW very difficult it is to change the habits of a lifetime merely because someone else tells you to do so. How much easier it would be if some great advantage was immediately apparent when the old habit was discontinued. Then the change would probably be made immediately without further exhortation.

This is the kind of problem which confronts all those trying to further the plans for clean air in Great Britain, by the change from raw coal to some form of smokeless fuel. The use of such a fuel demands a definite effort of the intelligence on the part of the householder to master some new but simple technique. It does not of course apply when the change is to gas or electricity. Here the extra cost is the most important factor.

At the annual conference of the Smoke Abatement Society at Hastings, Lord Mills spoke of the possibilities of an ' all bright and glittering smokeless air ' over the towns and cities of Britain, if industrial and private fuel consumers would co-operate in the clean air policy. ' There can be no hope of cleaner air in our cities,' he added, ' unless people are prepared to use their fuel more efficiently and more sensibly than in the past.'

This means that the right type of appliance must be available, the stocks of smokeless fuel need to be abundant, and there must be an informed community, which knows how to make full use of both appliance and fuel and has grasped the advantages which will result from their use. The consumer, whether domestic or industrial, must be able to get at least as good a service from the new appliance as from the old, and the advantage must be apparent without his having to search for it.

This may be easier for the industrial consumer who with the help and guidance of experts can calculate what the saving in fuel and manpower will be for the expenditure of so much capital. If the savings are satisfactory, the change will be made. With the domestic consumer, however, not only will the appliance have to be available at a price all can pay and have an up-to-date appearance, but the burning of the fuel must present no difficulties. The housewife's routine must not be interfered with, and the house warming abilities of the new appliance must be a considerable improvement on the old. The handling of the fuel must be no more difficult, nor must the cleaning of the appliance and the disposal of the ash make for any more dust or dirt in the house.

Gas, and electricity too, comply with all these conditions. But the tariffs offered by most gas boards make the universal use of our fuel impossible among the great majority and its use for central heating is only feasible in those cases where the extra cost can really be made to cancel out the cost of labour or to provide a really attractive alternative to household drudgery. If the organic sulphur content of town gas could be substantially reduced to prevent any deposit beneath the boiler even after a whole heating season, gas would be superior to any other heating medium. No maintenance troubles, no need for storage tanks, a constant supply at constant quality and constant pressure—these are some of the advantages to be gained from its use. Every effort should be made to evolve tariffs which will bring the price within the reach of everyone who has installed central heating, or proposes to do so.

In his Presidential Address to the conference, Dr. R. Lessing dealt with all aspects of the problem of smoke abatement, but he also referred to dust which was likely to be emitted from factory chimneys, especially power stations where the cheaper grades of coal were habitually burned. These coals, ' untreated smalls,' are intermixed with quantities of fine dust. The proportion of dust to small coal is increasing year by year as mechanical methods of mining are developed and installed underground. Dr. Lessing recommends that these fines be separated from the coal at the colliery by some form of pneumatic coal cleaning. In the past it has been necessary to fit cyclones and electrostatic dust precipitators to prevent the flue dust from emerging from the factory chimneys. In fact the atmospheric pollution by dust has been on the increase as the smoke from factory chimneys has tended to decrease.

The damage done by oxides of sulphur in flue gases remains a serious problem in all attempts to reduce the effect of smoke emission and Dr. Lessing stresses the difficulties which face the industrialist who is trying to buy his fuel as cheaply as possible. He points out, however, that if only the buyer of the cheaper grades of coal was aware of the fact that by buying a treated small from which a large proportion of the sulphur containing refuse had been separated he was obtaining a fuel of higher calorific value, there would be no doubt that the amount of sulphur dioxide entering the atmosphere would be reduced.

Dr. Lessing's final point is, we think, particularly apposite. He does not think that the official title of his society is sufficiently all embracing and may even be a little negative. Soon he hopes that mere smoke abatement may be a secondary activity of the society. If smokeless fuel and the Clean Air Act come into their own and are vigorously applied, no longer need the emphasis be on the reduction of smoke emission but on the pollution of the air by dust and oxides of sulphur. It is to make sure that the society carries on its activities with the devotion it has shown in the past in ridding the great towns and cities of Britain of the scourge of a smoke contaminated atmosphere, that, as we have previously reported, Dr. Lessing has suggested that the name of the society be changed to ' The National Society for Clean Air.'

Personal Notes

SIR HAROLD SMITH, Chairman of the Gas Council, has been installed as the first Honorary President of the newly-formed Houldsworth Society at Leeds University. The Society commemorates the late Sir Hubert Houldsworth, Chairman of the National Coal Board until his death in February, 1956, who was a student and member of the staff of the coal, gas and fuel department of Leeds University and Pro-Chancellor for six years. In recent years the department of coal, gas and fuel has expanded and outgrown its title. Two new departments, chemical engineering and metallurgy, have been opened and the parent department renamed the department of gas engineering, general fuel science and ceramics. These three departments now form the Houldsworth School of Applied Science whose 200 students will move into their new £610,000 building next May. All the students are members of the Society which acts as a forum for discussion. Sir Harold will preside at all major functions during his year of office.

MR. S. A. KING, who has left the Eastern Gas Board as Area Commercial Manager to join R. & A. Main, Ltd., was guest of honour at three farewell presentation ceremonies. A sincere tribute was paid to him by Sir John Stephenson, C.B.E., Chairman of the Board, at a farewell luncheon, when the Board's principal officials were present. The presentation consisted of two pieces of Sheffield plate and a scroll of parchment bearing the Board's seal and signatures of those present. The second function was a complimentary dinner when 16 past and present colleagues of the Board's Tottenham Division presented him with a silver cigarette box engraved with his initials and their facsimile signatures. The third presentation was that of a fountain pen and was made at an informal ceremony at Epping, where he had his office as Area Commercial Manager. This was from Divisional Commercial Managers of the Board, and members of the Area Sales and Service Committee.

MR. F. S. HUNTER, District Engineer and Manager at Bridlington, Yorkshire, of the North Eastern Gas Board, has retired after 49 years in the industry. He went to Bridlington as Engineer, General Manager, and Secretary of the Bridlington Gas Company in 1936 and about a year later was appointed Managing Director and Secretary of the Hornsea Gas Company, positions he held until nationalisation. He then became District Engineer and Manager. Mr. Hunter started his career in the gas industry with the Ormskirk Gas Company in 1908 and became Manager of the Company in 1923. He will be succeeded by MR. H. D. SULLIVAN, of Worksop.

MR. EDWARD B. CUTLACK, lately of the training and education staff at Watson House, has been appointed Chief Instructor for the East Midlands Gas Board's area training centre at Long Eaton, Notts.

Revision Planned

The Board of Trade propose to revise the tolerances laid down in the Weights and Measures Regulations, 1907 (SR & O 1907 No. 698) for weights in use for trade purposes. Details may be obtained from The Controller, Standard Weights and Measures Department, Board of Trade, 26, Chapter Street, London, S.W.1.

Obituary

MR. ALBERT JOHN WEST, of the Parkinson & Cowan Group of Companies, died on October 7, aged 81 years. Mr. West retired in 1947 after over 50 years' service with the Company having joined W. & B. Cowan Ltd. in the '90s as a junior prior to the amalgamation of the firm with W. Parkinson in 1900. He was Secretary to the Parkinson & Cowan Ltd. Companies in the years immediately following the first world war and in the middle '20s was appointed Director and Manager of The Gas Meter Co. Ltd. which had by then become part of the Parkinson & Cowan Group. During this period he made two visits to Australia and New Zealand on behalf of the Company's interests. In 1938 he was appointed to the Parent Board of the Group and held office until his retirement in 1947. He was also a Director of P. & C. Gas Meters and was largely concerned in the management of that Division of the business. His kindly disposition and high principles won the respect of all who knew him.

MR. EDWARD JOHN KILMORE FUSSELL, former Secretary of the old Tottenham and District Gas Company, died suddenly at the age of 80 at the home of his daughter at Ware, Herts. Mr. Fussell spent his working life in the gas industry, beginning as a boy with a small gas undertaking in Cornwall, when his duties included lighting lamps, clearing meters, and making tea for the stokers. After a period with Cash Stone and Co., as their chief parliamentary clerk, he joined the Tottenham Company as Secretary and Accountant in 1915. He was appointed to the Board in 1943. As a chief official of the old Tottenham undertaking he shared in the work and responsibility which came with its tremendous growth and expansion after the first world war.

MR. ALEC BOARDMAN, who had been a member of the sales staff of Ascot Gas Water Heaters Ltd., for 24 years and who since the war has been one of their representatives on the area of the North Thames Gas Board, has died after a long illness. A memorial service, was held at the Russian Orthodox Church in Kensington, London, on October 13.

MR. RODERICK D. COWIE, who for the last four years has represented Hattersley & Davidson, Ltd., and The Wormald Patent Locks Co., Ltd., in Scotland and Ireland, died recently at his home in Whitburn, West Lothian, after a short illness.

MR. DAVID MCINTYRE, who was for 47 years Manager of Dungannon (Co. Tyrone) Gas Company, died suddenly on October 2. He retired five years ago.

Diary

October 18.—MIDLAND SECTION, I.G.E.: Visit to the Staveley Iron & Chemical Co., Ltd., near Chesterfield. 10.45 a.m. 'Some Aspects of and Recent Developments in Plant for the Compression of Gas on Distribution Systems,' by R. W. Nelson. 3 p.m.

October 19.—YORKSHIRE JUNIORS: Annual General Meeting, Head Office of North Eastern Gas Board, Bridge Street, Leeds. 2.30 p.m.

October 21.—EASTERN G.C.C.: Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2. 11 a.m.

October 21.—NORTHERN G.C.C.: Gas Board Offices, 30, Grainger Street, Newcastle-upon-Tyne. 11.15 a.m.

October 24.—MIDLAND JUNIORS: Visit to the works of the Northern Aluminium Co., Ltd., Banbury.

October 24.—I.G.E. (WALES AND MONMOUTHSHIRE SECTION): Annual General Meeting at Porthcawl.

October 26. — WESTERN JUNIORS: Demonstration Theatre, Radiant House, Bristol, 2.30 p.m. Paper by Mr. R. G. Lloyd of Bristol, followed by discussion and tea.

October 29.—EASTERN JUNIORS: King's Lynn. 'The Use of Ammoniacal Liquor as a Nitrogenous Fertiliser,' by W. W. Law.

October 31.—NORTH THAMES G.C.C.: Westminster City Hall, Charing Cross Road, W.C.2, 2.30 p.m.' Address by Mr. Stirling Everard, M.B.E., Manager of the Board's Market Research Section—'Smokeless Zones and the Gas Load.'

November 5 and 6.—COMBUSTION ENGINEERING ASSOCIATION: A study in detail of N.I.F.E.S. third progress survey. Old Swan Hotel, Harrogate.

FIRST SMOKE CONTROL AREA IS APPROVED

Minister Confirms Liverpool Order

THE first confirmation of an Order under the Clean Air Act, setting up a smoke control area, has been given by Mr. Henry Brooke, Minister of Housing and Local Government. It covers 100 acres in the centre of Liverpool.

The area runs from Georges Pierhead to Hatton Garden and Manchester Street. It is bounded on the north by Chapel Street and Tithebarn Street, and on the south by James Street, Lord Street, and Whitechapel. The area comprises shops and offices, with a few houses and some Corporation buildings.

There were no objections to the Order, which will come into operation on April 1, 1958.

Under the Clean Air Act, local authorities are empowered to declare smoke control areas by means of orders confirmed by the Minister. These are areas in which it is an offence to emit smoke from a chimney. An order may apply to all the buildings in the area or may be limited to certain buildings or it may exempt specified buildings or specified fireplaces from its operation.

The Minister has also confirmed three further smokeless zone orders under the Manchester Corporation Act, 1946. These smokeless zones are in Miles Platting, Ancoats, and Harpurhey, and in each case the zones cover areas which are to be cleared and redeveloped for housing. Clearance will be completed before the Orders come into operation, and the zones will therefore affect only the new houses erected on each site. The Miles Platting Order comes into operation on April 1, 1958, the Ancoats Order on July 1, 1958, and the Harpurhey Order on November 1, 1958.

The confirmation of these three orders brings the number of smokeless zones in Manchester to 14.

BRADFORD PLANS BIGGEST CLEAN AIR ZONE

BRADFORD Health Committee's plans for one of the biggest smokeless zones in the country has been approved in principle by the Ministry of Housing and Local Government.

The city already has 20 smokeless zones covering 1,500 acres; the proposed zone covers 600 acres. Bradford is one of the foremost cities in pioneering smoke abatement.

Most of the houses in the area affected will have their coal burning grates converted to burn smokeless fuel, three-tenths of the cost being borne by householder, four-tenths by the Government, and three-tenths by the Council.

MR. THERM AT DUMBARTON TRADES FAIR

Mr. A. P. McInnes, District Manager, Dumbarton & Helensburgh District of the Scottish Gas Board, demonstrating the new convector gas fire to Provost J. J. McGregor, Mrs. McGregor and Mr. R. Jenkins, Chairman of the Trades Fair Committee, at the opening of the Dumbarton Trades Fair.

FEWER FIRMS SEEK CHANGE TO OIL FUEL

N.I.F.E.S. Claims 1 mill. ton Coal Saving a Year

A SUBSTANTIAL fall is reported in applications from firms for Government loans towards conversion of fuel plants to oil-burning. A year ago oil-conversion accounted for 75% of applications for such loans; now the proportion is 25%. About ten firms now ask for help with oil-conversion in an average month, compared with 40 previously.

The trend away from oil was described recently after the Directors of the National Industrial Fuel Efficiency Service reviewed its third progress survey. In the year ended March 31, the survey states, loans were approved for 247 schemes for oil-conversion totalling £864,765 and enabling 165,560 tons of coal a year to be replaced by oil. Loans for other fuel-saving schemes totalled 143, amounting to £1,022,636 and saving 78,063 tons of coal annually.

A substantial growth in demand for N.I.F.E.S. services is reported. During the year engineers made 13,493 visits to factories, against 12,509 in the previous year. More than 2,000 premises were visited for the first time. Heat and power surveys showed an average possible saving of 18.4% of total fuel consumption of these undertakings.

Altogether the service estimates the accumulated saving of coal through increased efficiency in its first three years to amount to between 500,000 and one mill. tons a year. Total possible saving through higher efficiency is estimated at about 10 mill. tons annually. Sir Leslie Hollinghurst, Chairman, called on the Government to make it easier for industrialists, especially smaller ones, to finance the installation of fuel-saving equipment. Mr. L. A. W. Jenkins, a Director, advocated a scheme for training and certification of stokers to increase efficiency.

Report Wanted

A resolution, 'That the Gas Board be asked to instruct their divisional managers to report to the local committees on what has been achieved by integration, and in other respects,' was carried unanimously at a recent meeting of the South Western Gas Consultative Council.

Helping the Aged

Defective appliances in the homes of 7,000 old people have been made safe free of charge, by the West Midlands Gas Board during the past 18 months it was revealed at a recent Consultative Council meeting.

LIQUID METHANE IMPORTATION FACES A FURTHER PROBLEM

Canvey Island U.D.C. Move Over Storage Tanks

WHILE recent statements by gas industry chiefs on the importation of liquid methane would seem to indicate that the technical problems involved have been overcome, the proposition now appears to be running up against new, and this time human, problems.

BY a majority vote, the Canvey Island, Essex, Urban District Council recently referred back for further information the recommendation from their General Purposes Committee concerning the building of methane gas tanks at Canvey. Moving the reference back, Councillor Ernest E. Norman, Council Vice-Chairman, said that the public had a right to know what was going on.

Methane gas, it was said, was more dangerous to handle than coal gas. He had information that tanks had been built elsewhere and yet these tanks at Canvey were experimental. 'We should do everything we can to stop it,' he added.

Councillor George A. Pickett, on the other hand, said that the Council had been told that the tanks did not come under town planning. They had got all the precautions they could reasonably ask for as a result of a meeting with the North Thames Gas Board officers.

Mr. L. Lock Dingley (Deputy Clerk) said that the recommendation, if referred back, would make no difference legally one way or the other. The recommendation that was referred back stated that on the understanding that it was the N.T.G.B.'s intention not at any time, to exceed the height of 65 ft. with any tank, and that this height will be further reduced if possible, it be recommended that the Council approve in principle the proposed depôt of 24 tanks and 2 gasholders with several ancillary buildings.

This was subject to three things: That the requirements of the Chief Fire Officer and the Essex River Board be fully met; that the tree planting scheme which would form a screen be carried out in the coming winter, and further consideration be given to the height of the tanks after experience with the trial tanks and in consultation with the local planning authorities.

While, Sir Henry Jones, Deputy Chairman of the Gas Council, recently said that a 3,000-ton tanker was being adapted to bring an experimental cargo of the gas to the Thames, Mr. James Carr, Deputy Chairman of the South Western Gas Board, stated at a recent Press conference at Bristol that eventually 30,000-ton tankers were visualised.

S.E.G.B. FITTER IS PRAISED FOR BRAVERY

A 46-YEAR-OLD employee of the South Eastern Gas Board was praised by the Southwark Coroner, Mr. R. Ian Milne, recently, for trying to save two men buried under 20 tons of coal in a hopper. Mr. Milne told Walter Bourn, a maintenance fitter at the Board's jetty, Rotherhithe:

'You are lucky to be alive, and a very brave man to stay and do what you did.' Verdicts of accidental death were recorded on Alfred White, 63, of Redriff Esate, Redriff Road, Rotherhithe, and Charles Boxall, 51, of Farmstead Road, Bellingham, Kent.

Bourn, of Warham Street, Camberwell, was standing in the hopper with four other men. They were trying to free the chain of a crane which was unloading coal from a barge into the hopper. Bourn said: 'I felt the coal moving, then Boxall shouted and I saw he and White were going down in front of me. I was going with them but slower.'

Bourn went in up to his knees, but had hold of a piece of rope hanging from the crane and this helped him not to get buried, though White and Boxall were by now in the coal up to their necks. Then came another movement of the coal and White and Boxall disappeared.

Carbon Dioxide in the Foundry

BY installing carbon dioxide mould treatment in their foundry at Stockton-on-Tees, Ashmore, Benson, Pease & Co., Ltd., have overcome delays in mould and core drying. The process has considerably speeded up the foundry throughput and now the limiting factor in the size of casting turned out is no longer the drying oven but the capacity of the overhead lifting crane.

Two years ago the output of the foundry showed signs of slowing down because of the time needed for the preparation of moulds and cores and the movement to and fro from the drying ovens of the overhead cranes.

In the CO_2 process, cores and moulds are rammed up with silica sand to which is added 4% of sodium silicate binder, and carbon dioxide is passed through the sand mass causing the mould to harden without any form of drying.

The extent to which this process has spread through this foundry is clearly shown by the installation of a 2 in. main round the foundry and core shop conveying carbon dioxide at a pressure of 25 lb. per sq. in., fed from a bulk storage tank holding 6 tons of liquid CO_2. The latter has grown from the use of high pressure cylinders and later blocks of solid CO_2.

By installing this process, it was possible to cast in one piece a 16 ft. diameter base plate for a water gas generator weighing over 12 tons. Formerly it would have had to have been made in two halves to accommodate the drying oven. By the use of core boxes, the mould was made without the use of a pattern.

Mr. Therm with the Brewers

General view of the Gas Council's stand at the recent Brewers' and Allied Traders' Exhibition, Olympia.

NEW CONTROL CENTRE WILL AID EFFICIENCY

S.E.G.B. Building is Opened by Dame Alix Meynell

Exterior of the new South Eastern Gas Board district office at Streatham.

CRITICISM has been levelled at the gas industry recently because, at a time when the price of gas is going up, new, bigger, and better gas board premises are also going up. The cost of the new buildings is reflected in the higher prices, it has been argued.

It is a specious argument, as anyone visiting the new South Eastern Gas Board offices and depot opened recently in Streatham by Dame Alix Meynell, D.B.E., Member of the Board and Chairman of the Consultative Council, would quickly realise. The carefully planned layout—from transport bay and stores at street level through the clerical offices on the first floor to the district representatives' room on the top floor—must lead to increased efficiency and better service to the consumer.

This point was brought home, after the new building had been inspected, by Mr. W. K. Hutchison, Chairman of the Board, who said:—

'The building we have just inspected will play an important part in the service to consumers here in South London. With its associated showrooms it will be the service centre for 80,000 consumers in West Dulwich, Streatham, Balham, Tooting, and West Norwood.

'It will not ordinarily be open to consumers, whose requirements are met at the showrooms, which form the first line of contact with the public.

'The sale of an appliance or the receiving of an enquiry from a consumer is, however, only a small part of what is involved in the full service we have to give.

'After an appliance is sold, arrangements must be made for it to be ordered from the stores, for its transport and delivery to the house, and for fitters to attend to fix it. Then there are all the other aspects of consumer service, such as installations in new housing, the connecting of new supplies, pre-payment collections, the reading of meters and the rendering of accounts. I estimate that normally over half a million transactions will be involved each year in the part of our area served by this office.

'In the past this work has often been done at separate offices and stores, not always well situated or designed for the purpose, and these are naturally more difficult to control and manage. Just as a factory has to be carefully planned if it is to produce efficiently, so we believe that efficient, economical service to consumers can only be given from premises which have been designed and equipped for this special purpose.

'The building has been designed by Mr. W. Watson, the Board's Architect, in very close co-operation with the Commercial Manager and his staff. In spite of its strictly utilitarian purposes you will, I think, agree that the building has a modern and attractive appearance. The building work had to be carried out to a close schedule so that we could give up the lease of other premises, and we are grateful to Mr. Garrett, the builder, and the general foreman, Mr. Ladd, for carrying out the work so promptly and satisfactorily.

'The building will house 167 employees. About 50 of these will be occupying the building from day-to-day, mainly carrying out clerical work, and the others, consisting of district representatives, fitters, foremen, prepayment collectors and meter readers, will usually be out on the district.

'I am sure that bringing them all into this one centre, with better accommodation, will lead to greater efficiency and to more satisfaction in their work.

'As the purpose of all this is to pro-

Dame Alix Meynell, and Mr. W. Watson, Architect and Surveyor to the Board, inspect the plaque commemorating the opening.

The main clerical office.

vide a better and more efficient consumer service, it is most appropriate that we should have here to-day the Chairman and Deputy Chairman of the Consultative Council, Dame Alix Meynell and Mrs. H. S. Mair and Mr. J. E. P. Moore, Chairman of the Metropolitan District Committee of the Council. Unfortunately, Alderman J. A. Larby, J.P., Chairman of the West Surrey District Committee, the other committee of the Council most nearly concerned, is unable to be present.

'I am pleased to welcome also Mr. Goldsmith, the Chairman of the South East Joint Council for the Gas Staffs, and Mr. Smith, Branch Secretary of the General and Municipal Workers. The close co-operation of the organisations which they represent is of the utmost value in securing the most efficient use of manpower in all the departments concerned.'

Mr. Hutchison then asked Dame Alix Meynell, Chairman of the South Eastern Gas Consultative Council, to declare the premises open.

Before declaring the new District control centre open, Dame Alix Meynell spoke of the important work done by the Consultative Council in keeping a watch on the interests of the consumers, and laid stress on the partnership that existed between the Council and the Board. This partnership, she thought, was carrying out the wish of Parliament when it was laid down that the chairmen of the gas consultative councils should also be members of area boards.

Dame Alix spoke appreciatively of the help given to her by officers of the Board in getting first hand experience of the organisation of the Board's services. This new control centre would, she said, be of great value in maintaining the lines of communication between consumers and those whose job it is to provide an efficient and prompt service to them.

News from the Emerald Isle

PRICE OF GAS GOES UP IN LIMERICK

BECAUSE the city's gas undertaking made a loss last year, consumers in Limerick are to pay 2d. per therm more for their gas.

In the financial year ended March 31, 1957, the gas undertaking made a loss of £3,287 compared with a profit of £15,708 for the year ended March 31, 1956. This is attributed to extra consumption of coal in the horizontal retorts which had to be operated while reconstruction work was in progress, and to increased coal prices.

N.I. Crematorium

Belfast City Council's Parks and Cemeteries Committee has accepted a tender of £5,961 for the supply of gas cremators for Northern Ireland's first crematorium which is to be erected at the Council's new cemetery at Crossnacreevy.

Over to Gas

Ballymena (Co. Antrim) Borough Council has decided to install a gas-fired boiler for central heating at the Town Hall. This will replace the coke-fired boiler which has been in use for the past 24 years.

EIRE EXPORTS IRON OXIDE

IRON oxide, known locally as 'meather,' is being exported again from the Westmeath area of the Irish Republic to London for possible use by the gas industry.

It has been mined on a small scale in the past few months on Toar Bog. In some places it is found on the surface but usually from three to six ft. below ground.

In the 1914-18 war large quantities were exported. A Dutch firm is handling the present consignment under special licence.

COUNCIL OFFERS GAS FRIDGES

The tenants of Bangor (Co. Down) Borough Council's Ballymaconnell estate are to be asked whether they will avail themselves of a scheme whereby built-in gas refrigerators could be provided in Council houses at a rental of 2s. 9d. per week.

Loss Turned to Profit

Omagh (Co. Tyrone) Urban Council were told last week that their gas undertaking made a profit of £1,506 last year, against a loss of £2,751 the previous year. This follows the installation of up-to-date plant.

FROM ALL QUARTERS

Biggest Exhibition

Sir David Eccles, President of the Board of Trade, will open the sixth, and largest-ever, Factory Equipment Exhibition at London's Earl's Court next April.

Costly Gas Lighting

The refusal of the Minister of Transport to allow Brierley Hill Urban District Council to borrow £20,206 for converting lighting on district roads from gas to electricity is expected to cost the ratepayer £6,000, over the next three years.

New Showrooms

New showrooms have been opened by the Wales Gas Board at St. Asaph. Hitherto the nearest point for the payment of accounts has been Rhyl.

Keith Blackman Ltd., have a new acoustic laboratory at the head office and works at Tottenham, London, N.17, which is designed to permit the accurate study of industrial noise generation and its suppression.

Rhoden Partners Ltd., design and development engineers in mechanical engineering, have recently removed from North Row, London, W.1, to much larger premises at 29, Park Crescent, London, W.1 (Tel. LANgham 7488).

: TRANSATLANTIC CABLE :: TRANSATLANTIC CABLE :: TRANSATLANTIC CABLE :

: FROM HILDING CARLSON :

More Customers —More Gas Sold

THE FIRST OF A MONTHLY AMERICAN/CANADIAN NEWS FEATURE SERIES

NEW YORK—October 8.

THE American gas industry continues in its state of contradictions: More and more customers, more and more gas sold, together with greater inroads by the same (and not-to-be-named-here) competition that faces the British industry . . . new discoveries of underground reserves of natural gas . . . more announcements of programmes for expanding the transmission and distribution systems . . . sharp and publicly-aired conflict among segments of the industry. There is, indeed, little boredom in viewing the passing scene.

The proved recoverable natural gas reserves of the nation, officially, are now at approximately 238 bill. cu.ft. Those reserves are up more than 14 bill. from a year ago, and at that time the increase was 12 bill. over the earlier year.

In 1945, reserves were rated at 147.7 bill. During the ten years following, production for all types of utilisation totalled 75 bill. Reserves after all production, then, expanded by some 150 bill. in the ten-year period. For full understanding, this natural gas has a general calorific value of 1,000 B.Th.U. per cu.ft.

Federal Power Commission just announced that during the year ended June 30 it authorised construction of natural gas pipeline facilities estimated to cost more than £219,964,000. The new facilities are designed for an aggregate daily capacity of 2,250 mill. cu.ft., with 6,800 miles of pipeline and approximately 350,000 compressor horsepower.

In California, rather sizeable considerations have been announced during the past three months.

Southern California and Southern Counties Gas Companies, both headquartered in Los Angeles, opened a new pipeline carrying gas from fields in Texas and New Mexico to augment the capacities of their two other lines from the same areas. Immediately thereafter, the companies put 1,026 mill. cu.ft. through that system during a 24-hour period of their more than 2 mill. customers.

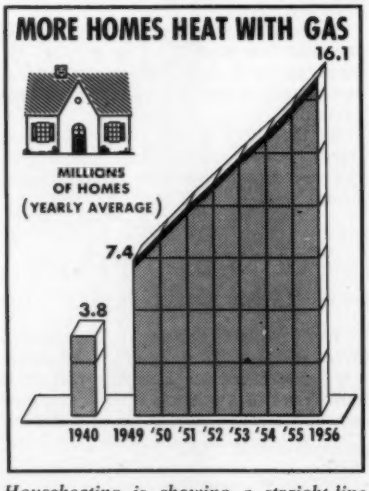
The neighbouring Pacific Gas & Electric Company, San Francisco, also is getting gas from out-of-state and announces that it will have doubled its original 502-mile line of 34-in. pipe by the end of this year. The capacity then will be 950 mill. cu.ft. a day, and compressor changes will add 75 mill. cu.ft. next year.

But the Pacific Gas & Electricity Company has other plans. One is a 1,300-mile pipeline from Canada's Province of Alberta to the San Francisco Bay area. Planned to have an initial capacity of 400 mill. cu.ft. in 1960, this line will require approximately 550,000 tons of large-diameter steel pipe and will be built at a cost of some £117,856,000.

Coupled with that project, P. G. & E., Canadian Bechtel, Ltd., together with other Canadian gas interests formed Alberta & Southern Gas Co., Ltd., to purchase surplus natural gas in Canada for the California market.

The day after announcement of the new company's formation, it issued the news that it had completed negotiations with Shell Oil Company for gas at the rate of 200 mill. cu.ft. daily. That, however, is the *initial* agreement. The contract arrangement provides that Shell will sell gas to the new company over the next ten years to an aggregate of 5 bill. cu.ft. Payments to Shell during the first ten years of this deal are estimated at £35,714,000. From that amount, approximately £5,357,000 will be paid to the Province of Alberta in royalties.

And that is how gas gets to California.



Househeating is showing a straight-line increase for gas, with 118% more customers in a 7-year-period. The yearly average, says American Gas Association, is now 16.1 mill. homes heated with gas. The forecast for the end of 1959 is 20 mill. A.G.A. emphasises that those figures do not include homes using liquefied petroleum gas or multiple-dwelling buildings with central gas heating.

'Old Stove Round-Up Time' is an American Gas Association cooker promotion programme, replete with cowboy atmosphere, that runs for three months each year in an effort to separate homeowners and their 'obsolete' cookers (five years or so in age). All, of course, in the interest of replacing with new cookers. A.G.A. estimates 2 mill. cookers will be sold here this year. That might well require some fancy roping by the cowboys, the statistics suggest. Cooker shipments in first eight months were off 11% from that point of 1956.

The nominee for the presidency of American Gas Association, Robert W. Otto, Chairman of the board, Laclede Gas Company, St. Louis, Missouri, is a former attorney general and former supreme court justice of that state. He has been with Laclede since 1932.

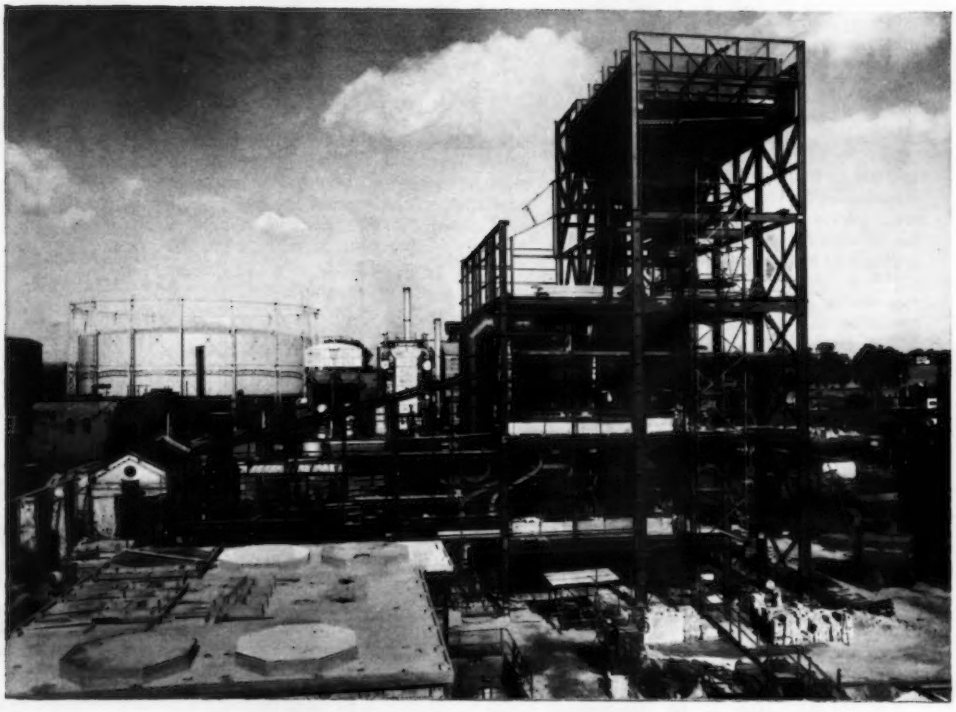
Appliance and equipment sales during the second half of this year, 'in all instances, save built-in cookers,' says Mr. Edward R. Martin, director, marketing and statistics, Gas Appliance Manufacturers Association, 'will be below the levels of the second half of 1956. Chief, among the reasons, is the current decline in new housing starts.'

Servel, Inc., manufacturers of the American gas refrigerator, appears to be on the verge of leaving the gas industry after years of tattered dignity, intramural strife, production difficulties and top-billing for its financial acrobatics. In fact, the first of its farewells has been made.

A move that is regarded as somewhat unique was the sale of its air conditioning division to Arkansas Louisiana Gas Company, a gas undertaking with approximately 225,000 meters. That company has established a separate

NOW UNDER CONSTRUCTION

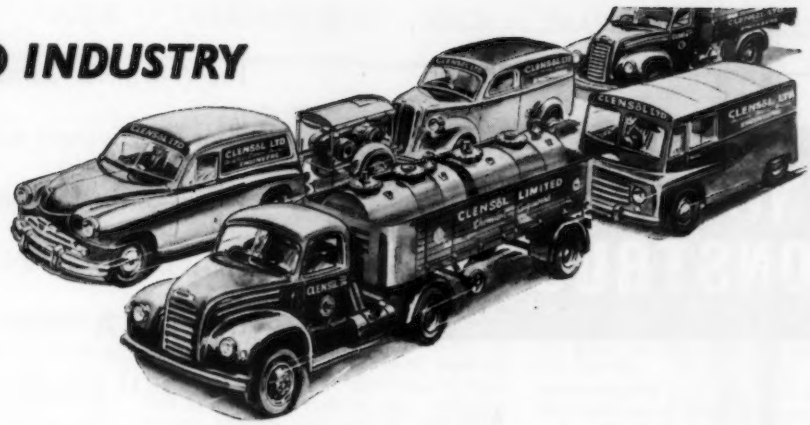
The W-D/I.F.E. Complete Gasification Plant (G.I. System) at the Gloucester Works of the South Western Gas Board. This plant will have a gasmaking capacity of 2½ million cubic feet of 470 B.Th.U. gas per day.



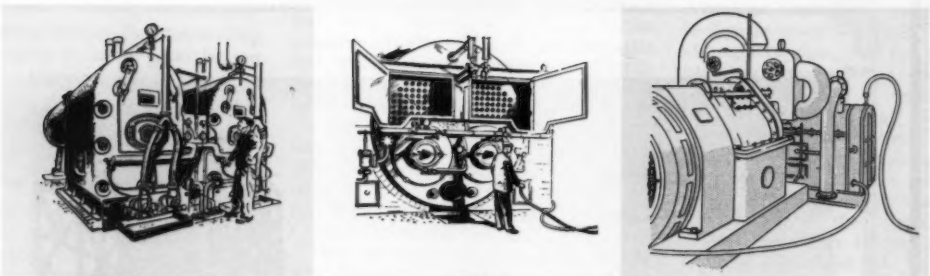
WOODALL-DUCKHAM
CONSTRUCTION COMPANY LTD

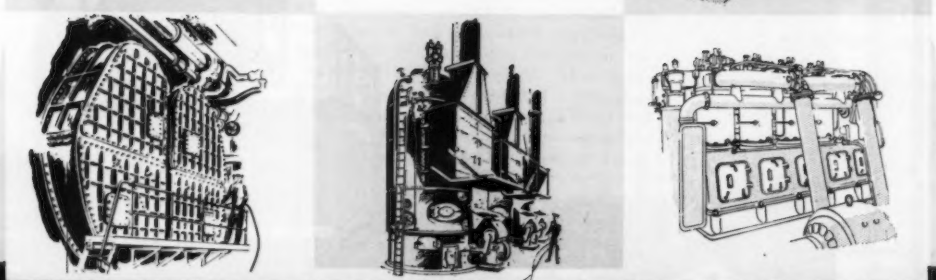
Woodall-Duckham House, 63-77, Brompton Road, London, S.W.3
Telephone: KENsington 6355 (14 lines) Telegrams: RETORTICAL (SOUTHKENS) LONDON

SERVICE TO INDUSTRY



TO KEEP YOUR PLANT 'CLENSŌL-CLEAN'





CLENSŌL

DE-RUSTING • DE-SCALING DE-GREASING and WATER TREATMENT SERVICES

Contractors to The Admiralty — War Dept. — Air Ministry — Ministry of Supply, Works & Transport—U.K. Atomic Energy Commission—Central Electricity Authority—Gas, Coal & Hospital Boards—Local and Water Authorities—the leading shipping, oil and industrial firms.
Approved by the majority of the boiler, process, refinery, production and associated plant manufacturers, insurance companies etc.

CLENSŌL—SERVICE TO INDUSTRY

CLENSŌL specialist services are available "round-the-clock" for the speedy and efficient removal of deposits from all types of plant, pipework, supply and discharge mains etc., including "in situ" removal of corrosion products, mill scale from new plant, following installation. All work is carried out by fully qualified and mobile teams under the supervision of Area Engineers. CLENSŌL materials are the result of 30 years of continuous specialised research, into practical and technically efficient methods of application for the 'pre-service' or routine removal of:— rust, mill and mineral scale, grease, oil, tar, beer and milk stone gel, sugar and effluent deposits, etc.

Our Technical Representatives are "on call" at all times for free survey and discussion—throughout the British Isles and Overseas.

HEAD OFFICE—40 BERKELEY SQUARE, W.1
'phones: HYDE PARK 4521-2-3
'grams: CLENSOPIPE, WESO, LONDON

Depots at—London, Manchester, Bristol, Birmingham, Cardiff, Glasgow, Hull, Belfast.

Represented throughout most overseas territories.

corporation for the manufacture and national marketing of the gas air conditioning equipment.

There is a dual interest in an efficient and well-sold gas air conditioner here. For the obvious advantages in minimising the deep summer valleys in the chart of gas send-out, following the high peaks that are built through the enormous househeating sales in winter—the undertakings would be not-less-than-pleased. The electric group, with seeming inconsistency, would be pleased to have a gas conditioner, and more than one, help them with their economic problems stemming from expansions of their distribution facilities to keep pace with the demands for air conditioning kilowatts.

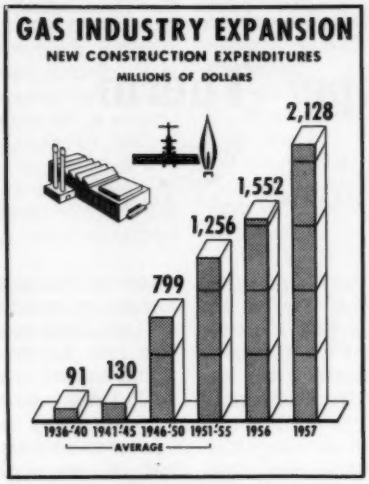
The American gas refrigerator will leave the Servel fold and soon, present activities indicate. A highly secret meeting in Chicago of top executives from the leading undertakings of the nation sought to develop a plan whereby the industry would buy the refrigerator business. So far, it seems, no such plan was tied down for presentation to the Servel management. In the meanwhile, that management is making independent efforts to sell the business.

The importance of the American 'all-gas kitchen' has developed notable dull spots. Some highly-placed and respected opinion now says it is 'not so sure how much the refrigerator really means in holding the cooking load, or the water heating, laundry drying, incineration loads.' Certainly, it is true the cubic feet of gas to the refrigerator do not represent big load. But, over the years, some sizable loads of dollars have gone into promoting 'the all-gas kitchen.' Oh, whatinell, we still can have 'the all-gas basement!'

Assets of Tennessee Gas Transmission Company have passed the $1,000 mill. mark, after 12 years of operation. The peak-day delivery capacity of the company's 9,811-mile pipeline system is 2,080 mill. cu.ft. Further expansion under proposal would increase the capacity to 2,800 mill. cu.ft.

Retail prices of gas to consumers, as measured in the indexes of U.S. Bureau of Labour Statistics, remain at last year's levels. With the average for the years 1947-49 as 100.0, gas for purposes other than space heating stands at 116.0; for space heating the index is 121.4.

Canadian nationalisation of Trans-Canada Pipe Lines, Ltd., has been feared by some with the Conservatives succeeding to power. The wild debate in Parliament over governmental aid to that gas system gave a basis for the fears. However, *Financial Post* enquired from well-informed sources and reported that it found no support for the nationalisation fears. The new Prime Minister is reported as being dead-set against any gas being sold for American utilisation at rates that are lower than for distribution in Canada.



More than £759,900,000 will be spent this year by U.S. gas undertakings and transmission pipeline companies to expand facilities at the fastest pace in the industry's history, American Gas Association comments. These expenditures will be 37% greater than last year and the total is more than triple the annual average for the previous 20 years. The distribution lines of the undertakings deliver gas to more than 30 mill. customers.

Westcoast Transmission Company's pipeline, 650 miles from the Peace River gas fields in Alberta and British Columbia to Vancouver and on to the U.S. border, is now in operation. This £60,714,000 line, incorporating more than 230,000 tons of pipe, was started in the spring of 1956. The initial capacity is 400 mill. cu.ft. a day; the ultimate, with addition of compressor facilities, is 660 mill. cu.ft.

Canada's B.C. Electric Co., Ltd., British Columbia, had peak-day sales totalling 18 mill. cu.ft. last winter and expects a peak of 36 mill. this winter. The forecast of 130 mill. cu.ft. has been made for a peak-day before 1975.

Natural gas will supply 25% of Canada's energy within 20 years, says the Deputy Minister of Mines for the Province of Alberta. Now, gas is credited with 3% of the Dominion's energy-total.

A pipe mill in Sault Ste. Marie, Ontario, just completed at a cost of approximately £7,143,000, will produce seamless steel pipe in a range from 4½-to-10¾ in., outside diameters. The quarter-mile plant is completely automatic.

The total bill for steel pipe imported by Canada last year has been set at £38,928,000.

Mexico-to-Massachusetts is the route of natural gas now flowing in one pipeline system here. Mexican gas was turned into piping in the north-east producing area at the rate of 126 mill. cu.ft. a day, with provisions to increase to 200 mill. cu.ft. With the new Mexican gas, the American system, Texas Eastern Transmission Corp., rates its daily capacity at 1,634 mill. cu.ft.

'I Don't Think I Could Ever Use Gas Again.' That heading has appeared on 4-column newspapers advertising in the Eastern states. It is General Electric at work for its cookers, attributing those words to the winner of a national cake baking contest. Bridgeport Gas Co., Connecticut, fought back with an ad. in its papers, using 'Mrs. Connecticut' (from the gas industry's recently-concluded Mrs. America Contest) to comment on her 'modern gas cooker—everything is automatic.'

Coal is a sick industry in the U.S., says a Congressional committee quite as though it had made a startling discovery. Research and development programmes for coal are inadequate. Imports of gas and oil create 'serious injury to the coal industry,' the committee said, and the long gas lines hurt coal with 'below cost sales.' Federal agencies are criticised for using gas where it is claimed coal is more economical. The committee recommends research activities on gasification of coal. All of which is very old stuff here.

Population estimate for U.S. in 1970 is 208,346,000, with annual increases of 2 mill. Currently, population stands at 171,500,000. Largest percentage gain by 1970 is seen for California, 44.0; the smallest is 9.2, for Missouri, home-state of a sometime-president.

SALES MANUAL

THE *Sales Training Manual*, published by the Gas Council, was originally intended for circulation among the sales personnel of the various area gas boards. Following its launching at the recent Sales and Service Conference at Harrogate, great interest has been aroused in the manual and it is hoped to arrange for a reprint in the near future. Any manufacturing firms or individuals outside the gas boards who would be interested to purchase copies should apply to Mr. R. J. Gregg, Publicity Manager, The Gas Council, 1, Grosvenor Place, London, S.W.1. The cost of these copies will be 10s. 6d. each, plus 1s. for the key.

Presidential Address to the London and Southern Junior Gas Association, October 11, 1957.

Towards a Cheaper Therm

By J. E. GRAY,

EASTERN DIVISION, NORTH THAMES GAS BOARD.

THE gas industry has travelled a long way since those early days when Murdoch amazed his friends by carrying gas around with him in bladders and the scientists of his day were enquiring sarcastically if it was proposed to use the dome of St. Paul's as a 'gasometer'; but the going has been rough at times and many obstacles remain to be cleared before the smooth broad highway that lies ahead can be reached. On many occasions along that path a stage has been reached where a halt has been called to take stock of the prevailing situation so that action required to make progress could be taken, and the resilience of our industry has been proved by its ability to adapt itself to changing circumstances by diverting from the established route to find fresh outlets. When, for example, electricity began to make inroads into the lighting load, cooking by gas was taken up and developed so successfully that the load being lost was made up and then surpassed to such an extent that cooking became the principal domestic load. Meanwhile, the use of gas for water and space heating was developed and increasing uses of gas for industrial applications were made and these loads enabled great increases to be made in the sales of gas despite keen competition.

New Consumers Sought

The aims throughout have been to seek out new consumers and encourage greater consumptions from existing consumers and, to meet their needs, to attain an ample supply of gas and of low sulphur content at an even pressure and quality and at a price competitive with other fuels; and to take all possible steps to ensure that the consumers' gas equipment is satisfying, sufficient and economic. By constantly endeavouring to achieve these standards, a steady advance has been made to the position where gas now plays an important rôle in supplying the heat energy demands of the country and is among the ten leading industries.

The present high level of industrial activity can be sustained only by an adequate supply of heat and power at a reasonable cost compared with the value of the manufactured product, and the ability of the fuel services to meet this need depends on coal, which at present supplies about 85% of the total fuel demands. The stage has now been reached when the country's increasing demands for fuel and energy are making an ever widening gap between these demands and home production of coal, and the means of bridging that gap is a perplexing problem still awaiting solution. So yet again the industry is having to take stock of the problems with which it is confronted—the principal ones being coal, costs and competition.

The coal position is particularly serious for us in the industry, we have always depended on an ample supply of good carbonisation coals as our chief raw material, but there are diminishing reserves of gas-making coals and the quality is not nearly as good as before the war. In spite of this falling-off in availability and quality, our industry continues to provide consumers with adequate supplies of refined smokeless and gaseous fuels and makes the most efficient use of the coal received, though the present price structure now operated by the Coal Board results in the industry having to bear a disproportionate burden compared with other coal users.

Coal produced in 1956 amounted to just under 210 mill. tons, but the National Coal Board is planning to step up the annual production to 240 mill. tons by 1965, rising to 250 mill. tons by 1970, by spending about £1,350 mill. on opening up new seams and in modernising and re-equipping existing mines. There was a surplus of £12.8 mill., but this is not regarded as enough to cover increased costs of materials and labour—the cost of producing one ton of coal in 1956 was 76s. 4d., which is double the cost in 1947. In addition, there is an outstanding deficit of £23.8 mill. and a substantial rise in charges was forecast. One of the present difficulties is the supply of large coal, but it is considered this position will be eased in the future because of changes in habits of coal consumers and the increasing use of electric and diesel locomotives on the railways. The coal thus released will be to our benefit.

Costs are of two kinds, internal costs over which a high degree of control can be applied, and external costs over which little or no control can be exercised. Coal, being the industry's chief raw material, accounts for a very large proportion of the external costs to be met by the gas boards, and the overriding problem is that of keeping down the price of our fuels in the face of a procession of increases in coal costs. A great deal has been done to absorb additional costs by internal economies and by achieving progressive increases in the efficiency of carbonisation; but saturation point has been reached, and our dependency on high-rank coal unavoidably makes us one of the first industries to reflect any increase in coal costs. Each new increase is, therefore, a further obstacle in the path of the cheaper therm.

Growing Competition

Competition, keen as it has been for many years, will undoubtedly become increasingly severe with the development of atomic energy. Since 1954, when Sir John Cockcroft forecast that by 1965 atomic power would save some 20 mill. tons of coal per annum, there have been great advances in the nuclear power station construction programme. It is expected that by 1965 the nuclear power stations in service will have a generating capacity of about 6,000 megawatts and that these plants, by reason of long operating hours, will generate about 25% of the total electricity used in the country. By 1975 about 50% of electricity used would be derived from nuclear energy. The following is an estimate of output and coal saving by nuclear power:—

	Output Capacity (Mw.)		Coal Saving by Nuclear Power
	Conventional	Nuclear	(mill. tons)
1955 ..	20,000	—	—
1965 ..	30,000-35,000	6,000-8,000	20-25
1975 ..	30,000-35,000	30,000-35,000	70-90

Every chance is being taken by the electrical industry to blazen the prospect of an abundant supply of cheap electricity, and the present significance of electricity for space heating and domestic uses can be traced to this

novel fascination of nuclear energy. Already there is evidence that this publicity is having its effects on local authorities. It is reported that West Bromwich Baths is to have electric heating installed, although, initially, it is expected to cost £900 more than an oil heating installation. One of the reasons given for deciding in favour of electricity was that with the continued development of nuclear power, running costs should be reduced in the next five or ten years. Other local authorities, too, are giving consideration to installing floor heating in blocks of flats using 'off-peak' electricity. No doubt many other examples could be given.

The oil industry, too, is alive to opportunities likely to arise by future fuel demands and it has been stated that Britain's internal use of oil for energy which in 1955 was 26 mill. tons will probably rise to 40 mill. tons, and by 1975 may reach 50 mill. tons. Part of the additional usage would arise from increased requirements for oil products where there is no easy substitute, such as aviation and motor fuels and lubricants; but much the greater part of the demand will be for those oils which can be used directly to replace coal, namely, heavy fuel oil for industry, gas and diesel oil for industry and central heating and kerosenes for space heating. In addition, oil usage would be extended to other fields, especially boiler firing. Thus, intense competition from the oil industry must be anticipated.

Three Problems

Hence, the three problems, coal, costs and competition present formidable and interlinked barriers which need to be scaled in order to advance along the road of progress. In regard to coal, this barrier may well be cleared by a direct frontal attack with a combined operation using oil and oil products on one flank, large scale high pressure complete gasification on the other, and in the centre, a comparatively small number of modern and efficient conventional carbonising units. Costs and competition, being so closely interwoven, would appear to require a more subtle approach, and the best chances for success would seem to be a two-prong attack consisting of increased consumptions and the cheapest possible therm.

All branches of the industry are involved in this campaign, the likely strategy has been announced and the tactical plans are now awaited. The coal problem can be tackled only after extensive reconnaissance, but we can get to grips at once with costs and competition. Nuclear power equipment has not yet been issued, supplies are eagerly awaited; but we have got gas—an easily transportable form of heat energy, clean and smokeless and needing no storage, which can be supplied on tap and be conveniently applied for effective utilisation. In support, we have coke and the many by-products of gas on which many industries are so dependent. Supplies are not lacking and will increase, so that no opportunity need be lost by the utilisation side in building up more and bigger loads. Meanwhile, there must be no delay by the remaining sections in taking all possible steps that lead to the cheaper therm.

All engaged in gas distribution are keenly aware of the urgency of the problem of the cheaper therm, though it may have appeared at times that distribution engineers generally have been somewhat slow in adopting new ideas. This is because the present day standards of practice have been built up by a series of steady and progressive steps, based on principles developed by experience gained over a number of years, and they cannot afford not to heed that experience unless it can be proved from first principles, or by careful experiment, that it is not achieving the best results. These experiments may spread over a number of years to allow for sufficient time to elapse before a fair and proper comparison can be made with traditional methods. A typical example is the search for the best methods of protecting buried pipe lines against corrosion, research on which began over thirty years ago and is still continuing. Enthusiasm to exploit new materials and methods has to be tempered with a balanced judgment on what is fit for a particular purpose and what is economically sound.

Nevertheless, in gas distribution engineering, no less than in industry generally, there is a recognition of the need to adopt new techniques to meet changing conditions and there is a vigorous probing for new ideas and improved methods which would help gas to be distributed more cheaply, safer and surer. Many illustrations of this can be given; the widespread application of mechanical aids wherever possible, the application of the highest standards for welding on steel mains, the testing of welded joints by gamma-ray and ultrasonic methods, new ideas on pipe line coating, protection and testing, improved methods of supporting mains above ground and of laying mains across rivers, etc. These and many other examples have been given in recent technical papers and it will be noted that the underlying aim is to ensure that all possible precautions are being taken to enable mainlaying to be carried out speedily and efficiently and in such a manner that the pipes will have the maximum of effective life with a minimum of maintenance costs.

A wealth of experience has been gained both by boards' and contractors' personnel from current pipe line projects and this will prove to be invaluable in selecting the best possible methods for future schemes and in assessing the value of new ideas now being developed. Railways and rivers, for example, can prove to be extremely difficult obstacles to cross, particularly when laying mains of large diameter, and the new auger-boring method of pipe laying under such obstacles offers promise. Auger-boring makes it possible for steel ducts up to 42 in. diameter to be laid even under the most hazardous crossings, and bores of about 200 ft. in length have been achieved. The operation is somewhat similar to that of normal thrust-boring but the plant is much larger and heavier and needs mechanical handling. The bore hole is made by means of a rotating cutting head and a spiral conveyor or auger carries the earth displaced at the face back through the bore hole and deposits it behind the machine. The cutting head revolves immediately in front of the leading edge of the steel duct and this duct is winched forward as the cutter advances. For minor obstacles this method would prove to be comparatively expensive, but savings could be made where the crossing is complicated and where unusual civil engineering difficulties would be encountered.

Improvements in Welding

In welding, too, improvements can be looked for. The 'stove-pipe' technique, the standard practice on most pipe lines, quick and efficient as it is, might possibly be speeded even more by automation. Recent news is that a 6 in. diameter oil pipe line 42 miles in length is soon to be laid in South America and the pipes will be welded together by means of an automatic welding machine. This machine will be suspended over the joint from a side boom tractor travelling alongside the trench and clamps fitted to the side boom will fix the pipes securely while the joint is being made. With this equipment it is claimed that a complete welding pass can be made in only 17 seconds. This pipe line is of interest in that aluminium pipes each 40 ft. in length will be used. Aluminium was chosen not only on account of a shortage of steel tubing, but also because of its higher corrosion resistance, its ease of handling and lower transportation costs. The pipes are produced by extrusion, the aluminium ingot being heated to a suitable temperature before being forced through the circular die. The largest pipe made so far by

this method has an internal diameter of 14⅞ in. and is 31 ft. long. While on the subject of pipe materials another comparatively recent development should be mentioned, that is the production in France of mechanically jointed spun pipes made of a ductile iron known as spheroidal graphite (S.G.) iron. The essential difference between ductile iron and ordinary cast iron is that whereas the graphite content in cast iron is in the form of flakes, in ductile iron the graphite is in the form of spheroids. This spheroidal form reduces to a minimum the number of discontinuities in the surrounding metal with the result that ductile iron has far superior mechanical properties. By virtue of their toughness and strength, ductile pipes can be used for mains working at very high pressures, and, at the present time there is a refinery gas pipe line in operation at a working pressure of 425 lb. per sq. in. The main was tested at 850 lb. per sq. in. with gas and at 1,280 lb. per sq. in. with water.

There has been a tremendous surge of distribution activity since vesting day and over 16,000 miles of mains have been laid involving an expenditure of about £72 mill. Most of these mains have been laid in cast iron pipes with mechanical joints, but welded steel mains have been used where relatively high pressures are employed. Much of this extensive mainlaying has been brought about in extending local supply systems to feed new consumers, but a large proportion is related to the linking up of local systems to enable the various schemes for centralised production to proceed. With but few exceptions, most of these schemes must by now have reached an advanced stage of progress and the degree of integration being attained is leading to the possibility of the national grid referred to recently by Sir Harold Smith when indicating possible long term developments.

Conception of Grid

One can conceive this national grid to be an arterial network of bulk supply mains fed at the coastal extremities with gas from production plants at the oil refineries together with gas from transported liquefied methane and possibly even with natural gas piped across the Channel, while the inland terminals would take gas produced by complete gasification plants sited in the colliery regions. Feeding into the system at intermediate points would be gas from conventional carbonising plants, the surplus gas from coke oven plants and supplies of methane from mine drainage. The mains, therefore, would need to be capable of dealing with extremely large volumes of gas at pressures ranging up to possibly 200 lb. per sq. in. gauge and regional distributing centres strategically situated would be required to monitor the various supplies. The ability of being able to export and import gas from one board to another conjures up an exciting prospect offering vast scope for effecting economies in many directions.

Among the numerous complex problems needing solution to gain this ideal distribution system would be that of providing the storage required to accommodate the large volumes of gas that would become available during periods of low consumption, and needed also to assist in meeting demands on the grid at peak loads; though the considerable reservoir capacity of the system would lend itself to the technique of 'line packing' described by D. L. Copp, and this could offset storage deficiencies at critical periods. The concentration of sources of supply would demand unquestionable reliability and safety of all regulating equipment and the question arises, will the conventional diaphragm incorporated in the present design of pressure and volume governors stand up satisfactorily to long operational working at the high pressures expected? Or will the diaphragm need to be replaced by a piston or bellows? Many other questions could be posed and a consideration of these problems undoubtedly would form the basis of a most interesting and valuable paper for the future.

Mainlaying developments, interesting though they be, form but a small part of the endeavours of distribution engineers in assisting to achieve the cheaper therm. More scope lies in the larger field of maintaining existing supply systems in which there is comparatively large and continuous expenditure. Most of the systems are ageing, some even aged, and while age is not directly a function of the life of a cast iron main—indeed, many of my board's mains laid over 80 years ago are in excellent condition and, as far as one can see, likely to remain so indefinitely—experience has shown that the life of most existing services does not extend beyond about 40 years. Intensive renewal programmes, therefore, have to be maintained continuously to prevent a widening gap between the number of services relaid and the number requiring replacement. More maintenance is required on the lead joints of feeder mains as a result of the tendency for higher working pressures and, in many cases, savings have been made in having this work carried out under special contracts. To extend the life of these joints, the standard practice is to fit them with leak clamps and to provide against corrosion by moulding the clamps with molten 'mexphalte' or similar substance.

All this work involves a considerable number of trenches being opened in the highways and the cost of making them good is now an expensive item. In many cases costs can be reduced by carrying out maintenance work in conjunction with highway improvement and repaving schemes. Where no roadworks are in progress every attempt has to be made to keep trench openings to a minimum and several methods are available; for example, the renewal of defective services, where possible, by drawing copper tube through existing services, thrust-boring for services and small diameter mains, though in built-up areas where this technique is most needed it is frequently least practicable, the use of underpressure connections, which, apart from other advantages, save the extra opening needed for 'bagging-off.' No experienced man will open more ground than is necessary, but he must know the position of main or service, and the value of accurate and up-to-date records is obvious. Where no reliable information is available, the 'Cintel' mains finder has been found of great value in avoiding needless trial holes. The savings made by such methods, whilst perhaps small in themselves, in the aggregate can amount to a large sum.

School of Experience

Distribution engineering, being essentially an art, can only be learned by practical experience, and for many years mainlayers and servicelayers have obtained knowledge of their craft in this hard school. With the increasing use of mechanical aids and new materials it is very necessary that skill must keep pace with new techniques and there is general recognition of the value of an organised course of training. Learning on the job to be successful requires that the mainlayer or servicelayer in charge must not only be a skilled craftsman but also capable and willing to demonstrate his craftsmanship to the trainee, whilst the latter must show aptitude and keen interest in the work; moreover there is always the risk that bad as well as good practices are being passed on. A suitably organised training course would ensure that only standardised training in approved methods and techniques is given to the trainee, and this training could not only lead to better quality workmanship on the job but also savings in maintaining expensive equipment.

So far possible savings have been explored solely from the technical side and there remains the most important

The CORT-KRUPP Resonance Screen...

The CORT-KRUPP Screens

These high speed horizontal screens working at 500 to 1000 r.p.m. give exceptionally efficient screening at high capacity, yet the vibration, transmitted even by the largest screen through the rubber controlling buffers and base mountings, is far less than the vibration set up by any other type of screen.

By the use of the resonance method mechanical equipment is simplified and considerably reduced compared with other types of screen, affording obvious savings in operating power and maintenance.

Messrs. Fried. Krupp of Germany have licensed Corts to produce the full range of their resonance screens in the U.K.

Messrs. Krupp have unrivalled experience in the design and production of resonance screens for over 25 years and have built screens for the widest possible variety of duties throughout the world.

The collaboration between Corts and Krupps engineers assures you not only of a well proven efficient screen, but of prompt technical and mechanical service.

Sole Manufacturers in Great Britain

ROBERT CORT & SON LIMITED

MECHANICAL HANDLING ENGINEERS

READING · ENGLAND *Telephone:* READING 55046 (5 LINES)

D

DESIGN

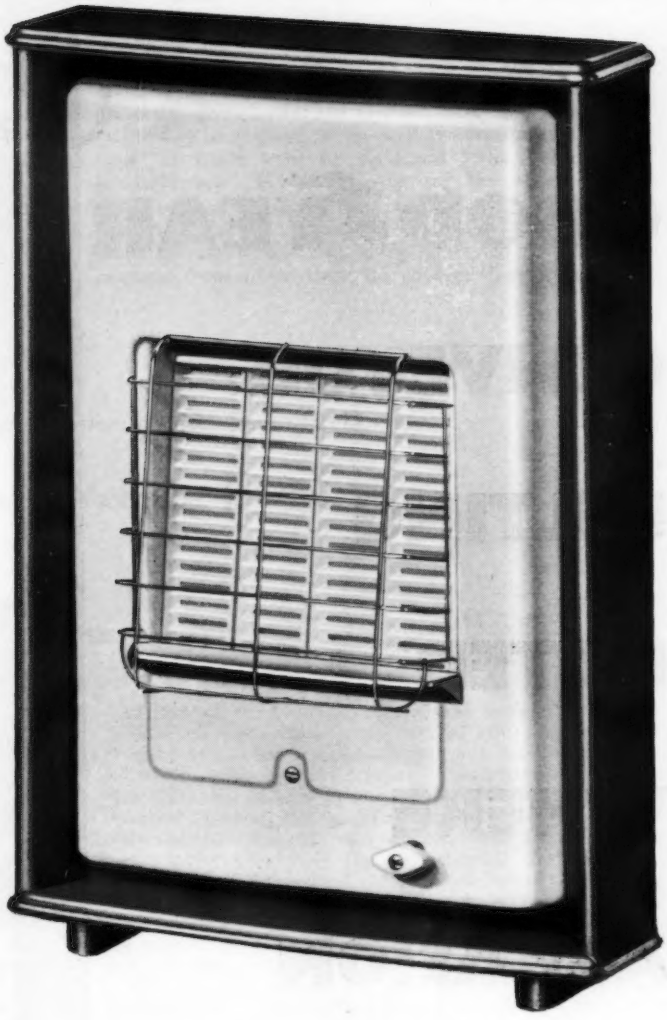
What is good d

RADIATION GROUP SALES LTD., 7 STRATFORD PLACE, LONDON, W.1

design?

If it is something that combines functional beauty with efficiency in an article which sells at the right price, you have it in the

NEW WORLD
RADO-VECTA



- There is no more effective Convector Gas Fire than the RADO-VECTA
- Due to the "total head break", the efficiency remains almost constant in spite of wide variations in chimney pull
- New box type Rado Radiants are fitted
- The inner and outer fronts can be finished in different colours and the RADO-VECTA is available in nine attractive two-colour combinations
- Rating—16,000 B.Th.U/hr., 3-position tap, igniter and governor

Concentrate on NEW WORLD PRODUCT OF Radiation Ltd **Gas Fires**

GOODYEAR CONVEYOR BELTING FITTED WHERE ABRASION IS MOST SEVERE

At the new South Bank Coke Ovens of Dorman Long (Steel) Ltd., the output of hot, unscreened coke from 150 ovens which carbonise 25,000 tons of coal per week is carried on this 48 in. Goodyear "Stacker" belt. It is 1,700 ft. long and is probably the longest coke wharf belt in the country.

Blast furnace coke passes over the screens and on to the duplicate conveyors on the right. Undersize coke is diverted to the conveyor on the left, the first of a series handling domestic coke—all fitted with Goodyear "Stacker" belting.

The conveyor on the left is the first of a series leading to the blast furnace stockpile. All belts, including those handling incoming "foreign" coke, are Goodyear "Stacker". Throughout the plant, the largest single unit in Britain, Goodyear belting has been fitted wherever abrasion is most severe.

THE GOODYEAR TYRE & RUBBER COMPANY (G.B.) LIMITED, INDUSTRIAL RUBBER DEPT., WOLVERHAMPTON

source—increased productivity. Few would dispute the fact that there is a large reservoir of human energy as yet untapped, which, if released, would immeasurably improve the prospects of the cheaper therm. What are the best means for getting this extra effort? The introduction of incentive schemes may result in an increase in quantity of work done, but what of the quality? Faulty workmanship not only is expensive to rectify, but may take a long time to show. Moreover, manual workers are by no means the only contributors to productivity. Surely best results will be achieved by securing the co-operation of all ranks and it is here that Juniors, being in closest touch with the practical work, can exert great influence by encouraging individual initiative, by furthering the endeavours of the managements and the trade unions to foster mutual trust and co-operation and by radiating the warmth created by good human relations.

Among other industries, ours has an incomparable record in the field of industrial relations, and all engaged in it, no doubt as a result of this traditional absence of industrial disturbance, are at heart keen and loyal. Few would fail to respond to the call for greater effort if the issues at stake were to be made known clearly and unmistakably. However successful the efforts of the planners and designers may be in creating the future pattern of the gas industry, they alone cannot bring their plans to reality, but only by a concerted and collective response from all sides can the cheaper therm be attained.

A paper to the Institution of Gas Engineers, South Western Section, September 18, 1957.

The Place of the Specialised Vehicle in the Transport Fleet

By A. W. MAHONEY, M.Inst.T.A.

A SUCCESSFUL transport organisation must have as one of its main watchwords flexibility and the aim in the Plymouth and Cornwall Division has been to secure maximum vehicle adaptability and to make the organisation capable of handling efficiently anything from fragile domestic appliances to the heaviest bulk load. Another facet of a good transport organisation is that of adapting vehicles for specific duties provided that complete regard is paid to what is the economic limit of specialisation in each case. In the remainder of this paper I have endeavoured to amplify this statement by enumerating the progress we have made towards this end.

Starting with the heavy duty vehicles and placing them in order of importance, we have the general purpose vehicle used for all duties likely to arise in the normal gasworks, for the handling of coal, coke, oxide, rubble, etc. The correct vehicle for this type of duty is without doubt the short wheelbase 5 ton tipper and it has been found that a slight variation from the standard body, i.e., in length and height, has made an appreciable difference in the overall cost of operation of this class of vehicle. We therefore construct our own bodies on these tippers at a total cost of approximately £140. The capacity of the box alone is about 5 cu. yd. and it is capable of extension in two stages, by the addition of side boards, to 7 and 10 cu. yd. By designing an overhang of 18 in. and extending the sub-frame to this extent it has been found that loads are tipped into skips and hoppers more successfully. It is also easier to tip to ground level as the load is discharged well away from the vehicle itself.

Channelled alloy flooring has been used with great success. This type of flooring has a great advantage over conventional plated flooring inasmuch that it can be turned end for end when showing signs of wear, and although its cost is approximately £40 compared with the £14 of the ordinary floor, its life is estimated at approximately five to six years on this type of work compared with less than 12 months in the case of the normal plated variety. A tailboard release of the sliding bar type has been evolved in the division and found very successful. It is operated from the rear offside of the vehicle with the tailboard hinge at the top of the board. 'Telehoist' underbody telescopic ram tipping gear has also been used and found eminently successful. Particular attention has been paid to tyres and it has been found that one firm has produced a tyre with a steep wall which, when fitted on twin wheels, leaves a wide gap and thus minimises tyre wall damage from coke trapping, etc.

In addition to these general purpose vehicles which are nevertheless economically specialised, we are operating 7 tonners and one 10 ton articulated tipper with specially constructed bodies. One of the 7 tonners, a Leyland 'Beaver' some nine years old, and the 10 tonner, also a Leyland, have been equipped with alloy bodies. The 'Beaver' was due for a major body overhaul some two years ago and it was decided to use a prefabricated alloy body for this purpose. A 'Bonallack' body costing £400 was fitted and increased the carrying capacity of the vehicle by almost 15 cwt. Considering that this vehicle is on full-time bulk loads it will be seen that this gain in carrying capacity more than offsets the difference in body renewal cost. In addition £5 each year is saved on Road Fund taxation.

The Leyland 'Comet' 10 ton end-tipping semi-trailer was built by R. A. Dyson and Co., Ltd., with a body of aluminium alloy, and although the use of this alloy cost £130 more than the conventional type of body, the tare weight was reduced by 30 cwt. The trailer dimensions are 15 ft. long and 7 ft. 6 in. wide, the body being 3 ft. 2 in. deep at the front end and 4 ft. deep at the rear. We intended to keep the alloy trailer in its original unpainted aluminium finish but it was found that the amount of work needed to keep it clean did not justify the result. It has now been brought into line with the rest of the fleet and has been painted to the Board's standard specification.

As a matter of interest it has been found that pierced steel planking which was originally used as portable airstrip material by the War Office, is now available through several agents. This material is considered ideal for coal and coke stocking purposes and is sold in 10 ft. lengths. When used on rough ground it prevents damage to vehicle wheels, tyres and springs during the dumping operation.

For the purpose of coke delivery it is obvious that the types of vehicles used must be very different from those used on heavy bulk loads. In areas where bagged coke delivery provides straight line loading throughout the year, the low-platformed fixed-bodied vehicle, with an approved extension and a maximum load of about 100 1 cwt. bags, is ideal. In other areas however it has been found that vehicles of this type are extremely uneconomic. For example in a locality where the number of bagged coke deliveries could not keep the fixed bodied type of vehicle operating for its maximum winter and summer period it would not be in the Board's interests to employ the more specialised vehicle. The most satisfactory type of vehicle to cope with varying delivery conditions has been found to be the 4/5 ton long wheelbase lorry equipped

with removable sideboards, a stacking rack, strengthened chassis and springs and heavy duty tyres. With the addition of tipping gear this vehicle becomes completely flexible. It can equally well do bulk and bagged coke deliveries, pipe removals, coal handling or any other emergency duty likely to arise. The saving in hiring charges by the re-allocation of duties when required is quite considerable. The maximum bagged load on vehicles of this type ranges from 3 tons 10 cwt. to 4 tons.

A new type of vehicle for delivery of bagged coal and coke has now been developed which is a marked improvement on the original conception of the conveyor bulk delivery vehicle. It is known as the 'Autobagger' and has a hopper body capable of carrying 8 tons of coal or approximately 4 tons of coke and is provided with a longitudinal conveyor belt in the centre of the body. This is an already established practice but the novel feature of this vehicle is the incorporation of a bag weighing and lifting machine at the rear. I have only mentioned this method as a point of interest and I have no data available to compare loading and delivery times, but it does serve to show that everyone faces the problem of speed of delivery where coke is concerned. Although this 'Autobagger' meets the Board of Trade regulations, there have been objections by local authorities under by-laws which prohibit weighing taking place at the points of delivery. The chairman of the firm which makes the vehicle has said that he cannot understand the objection and it will be interesting to see what will be the eventual result of this difference of opinion.

Another useful piece of plant for coke handling is the 'Lodematic' elevator, a portable device costing about £100, which can be used to assist in loading bags from ground level. Hydraulic power is provided either by a mains operated electric motor or by a 120 cu. cm. petrol engine. The loader lifts to a height of from 6 to 9 ft. and is particularly useful in small works with reduced manpower.

Before dealing with the more specialised vehicle it should be noted that practically the whole of the heavy duty fleet in the Plymouth and Cornwall Division has been converted to diesel working. A number of automotive diesels of different manufacture have been installed, and after a series of tests in varying types of vehicles we have standardised on the four-cylinder Ford and the Perkins P.6. engines according to the type and duty of the vehicle. Fully-detergent engine oils have been used in all diesel units and in our opinion their higher cost is more than offset by the excellent results we have obtained.

The Harrison purging machine, with which most people are now familiar, came into the fleet soon after nationalisation. It is used throughout the whole area for purging mains, holders and miscellaneous plant. A 6 h.p. Petter horizontal twin air-cooled engine is the motive power and the machine operates by burning gas oil in a combustion chamber and producing an inert gas which is fed into the main or holder during the actual purging operation. The machine is fitted with a standard 2½ in. male fire hose instantaneous coupling and uses 1,500 gal. of water per hour for cooling. The inert gas discharge line on the machine is 4 in. in diameter and the quantity of purge gas per hour available is 10,000 cu. ft. The quantity of gas oil used is approximately 6 gal. per hour. This machine is kept at the Central Repair Depôt at Coxside, Plymouth, and its maintenance and allocation are dealt with from that base.

Heavy Duty Loader

The majority of the mobile shovels now being used in the Plymouth and Cornwall Division are of 'Skyhi' manufacture and our experience in operating these machines has led us to incorporate a number of improvements which have now been adopted by the makers. In the first instance we had trouble with the drive shaft from the engine to the hydraulic pump. Its construction and design caused it to run eccentrically after about three months hard wear and thus placed undue strain on the oil seal.

Our first move was to replace the maker's drive shaft with one produced in our own workshop. This consisted of a splined shaft with Hardy Spicer couplings at each end. This removed the possibility of the driving pins, located at each end of the original shaft, wearing and causing the damage to which I have referred.

The next item was to remove the necessity of drawing off about 40 gal. of oil each time an oil seal repair had to be effected. We accomplished this by cutting the main feed pipe to the pump and inserting a cock. This means that when repairs are necessary the mechanic has only to turn off the supply of oil from the main tank to the pump and thus save an appreciable amount of time.

The standard 1½ cu. yd. bucket also fell below our operating standards and we have improved the effectiveness of this item by: (a) putting an extension on the back and sides of the bucket, this preventing spillage of material and breakage of windscreens; and (b) inserting a strengthened toeplate and supporting strap to prevent buckling of the centre portion of the bucket.

We also experienced considerable difficulty in ensuring that an adequate supply of grease was provided for the steering box on the standard model, but with the provision of a $\frac{3}{16}$ in. diameter copper pipe from the steering box to a grease nipple located on the chassis, maintenance is made much easier.

Mobile Compressors

Some years ago we experienced a considerable amount of trouble with compressors. It was found that owing to the varying conditions under which these machines were employed, e.g., on uneven gradients, etc., a high rate of big end failures was being experienced.

This was mainly due to the fact that when the compressors were working on uneven ground or a gradient oil levels in the crankcase were low at one end or other but more often at the pump filter end. In addition to these mechanical troubles there was a constant demand for transport to tow the compressors from one job to another. After much experimenting a mobile compressor was evolved which has stood the test of several years' hard work with excellent results.

The prime factor involved was to keep the compressor in the most level position possible and this was accomplished by mounting it on a Ford 5-ton long wheelbase chassis and pivoting it over a point on the rear axle. One man can tilt a compressor to maintain its level by operating the right and left hand jacking screw at the rear of the compressor. Its position is then secured by locking wing nuts at front and rear of the machine. A spirit level has been fixed to the machine to ensure accuracy. Additional blocks are carried to emphasise the tilt if necessary. This arrangement, as well as ensuring that the compressor is kept level no matter how steep the gradient, facilitates ease of conveyance and complete mobility on the job. The vehicle is classed as mobile plant and is licenced at the rate of £2 per annum. The motive power of the compressor is a diesel engine but the main transporting unit is petrol driven.

The next section of the fleet to be considered is the transport used by the distribution department. Pipe carrying can be a very costly operation. From the transport angle alone the incidence of damage to vehicles due to bad handling of pipe can be very high, and to this must be added the cost of manual labour used in loading and off-loading and loss of time in the re-allocation of labour.

After making an appraisal of these points and comparing actual operating costs the former South Cornwall Sub-division decided to fit a Neal hydraulic lorry loader to one of the existing vehicles. A long wheelbase Bedford was selected and the crane was duly mounted at an overall cost of £400. The loader can be fitted to almost any vehicle whether of platform, tipper or articulated types, and it is easy and safe to operate with an automatic cut-out to prevent overloading. It virtually does away with waiting time, greatly reduces the number of pipe breakages, and minimises vehicle damage.

During the laying of the high pressure integration mains in the division the crane has completely justified its installation. It can be operated by one man from the rear of the cab and the telescopic jib will extend from 5 ft. 6 in. to 11 ft. 9 in. The jib can turn through 180°, lift a maximum of 1 ton and is operated from an oil pump driven by the power take-off on the vehicle. The vehicle, which has now been converted to diesel working, has also been fitted with a special towing attachment which has been adapted for use with either bar or socket towing. It is considered that this vehicle with its single-handed operation and consequent economy is essential when there is a need for a vehicle on full-time pipe carrying duties, in addition to which it can also be used to lift large appliances and items of plant on works and at holder stations.

It was noticed some time ago that a considerable amount of mechanical trouble was arising in vans towing small syphon

units. This was largely due to the nature of the districts being served and the fact that the strain of combined hill climbing and towing was proving too much for the types of vans being used, while the time taken to serve outlying country districts was excessive.

As an alternative it was decided to mount a syphon unit on a Land Rover fitted with a power take-off in order to work the syphon unit from the main unit of the truck. This has had the effect of: (a) curing the mechanical troubles on the vans brought about by towing, i.e., clutch and brake wear and axle weakening; (b) speeding the actual transportation of the unit, by not having to comply with towing speed regulations; and (c) making the unit more mobile in the field.

A pick-up or small truck is the obvious vehicle for this particular job and it has been found that if the syphon unit is mounted on a ramp or alternatively secured by easily removed wing nuts its removal and subsequent return by the use of block and tackle can be completed in a few minutes.

The 300 gal. syphon service clearing outfit, which provides both vacuum and pressure and is fitted with a rotary exhauster and 2½ H.P. Ruston power unit, is mounted on a Ford 2-ton short wheelbase chassis and was put into operation in Plymouth in 1949. It has been found to be completely satisfactory in all instances. A point of interest to note is that by the use of this outfit all condensate is removed from the syphon. From previous experience with other types of syphon clearing equipment it was found impossible in some instances to remove the last 6 ft. of condensate from the syphon.

Another important factor is the time taken by the operatives to carry out their normal syphon run. It was often found necessary to spend an hour in clearing a 24 ft. syphon with the old apparatus but with the present unit the whole operation is carried out in less than 10 minutes.

The need for a mobile showroom in the Plymouth and Cornwall Division was made more apparent when integration mainlaying started. While the area mobile showroom was suitable for many purposes it was unwieldy when used as a fully mobile vehicle. Large numbers of people were about to become potential consumers and the problem was how to reach them complete with display. It meant (i) 'gaining' an existing vehicle for conversion from a department which would try and justify its retention in its original use; (ii) converting a vehicle small enough to be parked on village sites and yet large enough to allow potential consumers easy access; (iii) making the showroom attractive in appearance and in display; and (iv) converting at the least possible cost and yet retaining an appearance of taste and finish.

After taking all these points into consideration it was decided to adapt an Austin 3-way 25 cwt. van. This was done by a local firm at an overall cost of £300. The van carries 16 appliances which are well secured and attractively presented.

The whole body of the van, which was due for a major overhaul at the time, was stripped and rebuilt, with the near side consisting of a triplex glass frontage of 8 ft. divided into two equal sections. Rear steps were constructed to give access and doors fixed to open outwards. A lantern roof was installed to give headroom of 6.5 in. with small windows inserted in the roof to give an ample light. The whole interior was decorated in a light pastel shade and the floor covered with a cherry coloured linoleum. A small leaf table was fixed to the rear of the driving compartment in the interior of the showroom for the purpose of the preparation and signing of agreements, etc. Experience has shown that this vehicle has proved its worth and that its advertising potential is great. It is on permanent exhibition even when parked at the kerb and this in itself is a valuable sales asset.

It is the practice in this division to supply vans only for the clean jobs, i.e., sales, fittings, duties, etc. Whenever tools are carried and possible damage to bodies is likely, pick-ups are being used. This removes the likelihood of costly damage which is quite a normal feature in vans on mains and service work, and which invariably occurs on the light upper panels of a van. It has been found advisable, however, to either half-panel the interior of vans or fix slats in order to lessen the amount of damage to the actual bodies.

Vans used by fittings centres are equipped with pipe-racks to meet the problem of carrying small lengths of copper pipe.

Some three years ago it was found that a considerable amount of money was being spent in certain parts of the division on local private garage work. This was due to the fact that stations remote from the central garage were using the local people for all repairs, servicing, etc. A regular servicing system was set up in these particular areas and a small van which is also used as a breakdown van by the central garage was equipped with sufficient tools to enable it to do servicing on site. During this service reports are made out as to the condition of the vehicle concerned and appropriate action is then taken.

We have a first-class liaison between garage maintenance staff and management through the medium of monthly meetings and all suggestions or criticisms are given fair consideration. In this way it has been found that the men themselves adopt an interested attitude and contribute appreciably towards the efficient and economic running of the fleet.

Code for Heating Appliances

IT is not commonly realised by the public that every gas appliance in ordinary household use owes its 'fitness for purpose' to B.S. 1250. The standard is issued in separate parts, each of which lays down specific requirements for a particular appliance or group of appliances; Part I of the standard 'General requirements' is applicable to all the appliances.

Part 4 is a 44-page, illustrated publication which specifies performance standards and methods of test for hearth and panel fires, portable hearth fires, portable free-standing heaters, fixed flueless heaters, and flued convector heaters. A special feature of the standard is the introduction of a new method of measuring overall efficiency. The apparatus to be used is fully described and illustrated, the method is described in detail, and there is a system of classification whereby fires are described as 'Class A' or 'Class B,' according to their proven thermal efficiency.

It has been reliably stated that, if properly maintained, a gas appliance made according to B.S. 1250 should have a working life of at least ten years. One of the tests designed to ensure this desirable 'longevity' requires the appliance to be lit and turned off so as to give a cycle of two hours on and one hour off—the cycle to be repeated 100 times. Subsequently, the appliance is to be subjected to a further four cycles of 8 hours on and 16 hours off. Two of the five conditions which must apply after this test are that the gas rate must not have fallen by more than 10% from its initial value, and that there must be no distortion or mechanical breakdown of any part of the appliance . . . liable to lead to a reduction in its working life.

A realistic requirement in regard to fixed flueless heaters for use in nurseries (and elsewhere if special safety precautions are necessary) is that they must be provided with the means of being fixed to a floor or wall. There are many other thoroughly sensible and timely 'life saver' provisions. Every parent will welcome the requirement that a special key must be the only means of turning on a gas tap; and that no part of an operating heater shall have a surface temperature exceeding 150°F.

The standard emphasises that all heaters having exposed flames or radiants must be equipped with a 'British Standard' fireguard conforming to the requirements of B.S. 1945.

Copies of this standard may be obtained from the British Standards Institution, 2, Park Street, W.1. Price 8s. 6d.

*From a paper presented to the Manchester District Junior Association of Gas Engineers, September 25, 1957**

The Importance to Sales of Quality and Consistency

By JAMES W. RODGERS,
SALES AND SERVICE OFFICER, NORTH WESTERN GAS BOARD

ONE thing which must be brought home in the most emphatic manner is that gas is not a necessity.

Between October and December, 1956, about 5,000 domestic gas consumers in the North Western area were interviewed and asked to state the appliances and fuels which they used for cooking, space heating, water heating, laundry and other purposes. The interviews were carried out by the Board's district sales representatives in each of the ten groups. An effort was made to encourage consumers to reply and on average 92% of householders approached were successfully interviewed. (The other 8% includes households where the occupants could not be contacted after two repeat calls.)

The sample was selected by picking out names at standard intervals from the accounts records of consumers. This method of selection reflects characteristics with greater accuracy than is usual in consumer surveys, because the accounts records are already grouped in a way closely reflecting the social structure and housing characteristics of the districts within the area. The maximum margin of error for area results on the use of appliances ranges up to $\pm 1.2\%$—in the group of results most liable to error—but the results of individual figures will, in many cases, be subject to a smaller margin of error.

Assessment of Strength

The main purpose of the survey was to assess the strength of gas and its rival fuels—mainly electricity and oil—in the various fields of domestic usage. The information we have obtained will be of tremedous use in formulating our future sales policy. In addition, figures were assembled during the course of the survey which show the distribution of consumers according to the amount of gas used annually and the proportion of total gas sales accounted for by consumers at each level of consumption. These figures will be used in conjunction with the information on appliances to estimate the probable additional gas load that can be expected from installing combinations of appliances, *e.g.*—cooker and washboiler, etc.).

A further analysis, based on information obtained from interviewing, will help to pinpoint districts within each Group where sales-potential exists by indicating the use of appliances and fuels in houses of different age-groups (pre-1920, 1920-46, post 1946) and in local authority as distinct from privately-built houses. The districts and streets where the various types of houses predominate can be identified by sales personnel from their knowledge of their own territory.

Analysis of the results of the survey is still in progress but the first stage, comprising the use of appliances and fuels among the sample of consumers as a whole (before subdivision into gas consumption groups of age-of-house groups), has been completed for the area and for each of the area's ten groups. The first stage of the survey has shown that among gas consumers as a whole, gas maintains an overwhelming load for cooking. Out of 1,708,000 domestic gas users in the North Western area 96%, or 1,640,000, use gas for cooking. Within the groups, percentages range from 93 to 99. Electricity is used for cooking by only 8% of North West area gas consumers, while 2% use modern solid fuel cookers and 7% use old-fashioned solid fuel ranges.

Among laundry appliances the gas washboiler used by 46% of domestic consumers in the area, also holds an undisputed lead over similar appliances heated by other fuels. Only 2% of North West gas consumers use either solid fuel or electric washboilers. In this field, however, the electric washing machine, used by 22% of gas consumers within our area, is a strong competitor. The gas washing machine with hand-operated agitator is at present used by only 6% of North Western gas consumers. The gas/electric machine is used by about ½% of gas consumers in the area.

The hardest task for gas, and also its greatest opportunity, lies in the field of space heating and water heating. At present, only 17% of gas consumers in the North West use a gas fire or gas radiator and only 12% use a gas water heater. Competition from electricity is very marked; 43% of consumers in the area use electric space heating appliances (mostly portable fires) and 23% use electric water heaters (mainly immersion heaters). In the case of space heating, oil is also becoming a serious competitor and 15% of consumers in the area use oil heaters (nearly equal to the proportion using gas for space heating).

Among gas consumers who have a solid fuel back boiler installed (about two-thirds of all consumers), more than half have no auxiliary water heating appliances for use in the summer. One-third of consumers have no piped hot water supply and half of these at present rely on pans, etc., heated on the gas cooker or on water drawn from their washboiler. Clearly, this is not a state of affairs which can last long as living standards rise and amenities in the home are gradually improved. The task for gas in the next ten years will be to gain an increasing share of this expanding space heating and water heating market in the face of sharp competition from its rivals. Other information from the survey showed that only 15% of gas consumers in the area at present use coke for either space heating or water heating. Only 16% use gas pokers and 5% have built-in gas ignition for their fire or stove.

Luxury Appliances

Finally, there are the 'luxury' appliances which will be the necessities of tomorrow. Among these appliances only the fringes of future possibilities have been touched. At present only 1% of North West consumers use a gas refrigerator and 2½% use an electric refrigerator. So far, electricity appears to be leading the field but the field is wide open for expansion by both fuels.

Market research is a tremendously important factor in helping us to visualise the future and we, like the market research man, have our eyes on the domestic consumption of consumers. We are sometimes apt to lose sight of the fact that essentially we are really a retail selling outlet.

Despite our falling domestic consumption per consumer, you are probably aware that, as an entity, the gas industry has only about 1,000 gas showrooms to display its wares whereas in the competitive field electrical appliances are displayed in something like 15,000 shop windows and there are also countless hundreds of shop windows displaying other fuel using appliances such as oil and solid fuel.

Generally, throughout our area we are still distributing gas containing 25-30 grains of sulphur per 100 cu.ft. although the cry 'sulphur must go' was raised long before some members of this audience were born and the means of removal

* The title of this paper before abstraction was 'Good Companions.'

have long been available. One feels that the production side of our industry does not fully appreciate the handicap sulphur creates.

In the domestic field the drawbacks are fairly obvious but in the industrial field the position is even more serious. Consider an example. The two main uses of gas in vitreous enamelling are: (a) For heating dryers and (b) for firing the fusing furnaces. If the enamel comes in contact with sulphur oxides at either of these stages the finish is affected by loss of gloss known as 'scumming.' A few years ago Ryder & Culshaw of Stoves Ltd., carried out an investigation in their laboratories, the results of which were reported in a paper which they presented to the Institute of Vitreous Enamellers. They showed that the sole cause of 'scumming' is contamination by sulphur, and while this can arise from many sources, by far the most prevalent is the presence of sulphur oxides in the atmosphere of the dryer or of the furnace.

In order to avoid this trouble in the dryer either indirect heating must be used or the products diluted with a very large volume of air to reduce the concentration of the sulphur oxides below danger point. Either method means a considerable loss in efficiency. In the case of the furnace it is necessary to work with sufficient negative pressure on the flues and combustion chambers to ensure that products of combustion do not seep into the working space of the muffle. This means that considerable proportions of excess air are also drawn into the flues, again with loss of efficiency and increased fuel charges.

A few years ago the comparative costs of gas and electricity for enamel fusing were such that some loss of efficiency could be tolerated, but that is no longer the position and electricity, with its absolutely clean atmosphere, is now able to compete on price with our fuel.

Butane

Another competitor to town gas is now entering the industrial field, namely, butane in bulk containers, which is fast becoming a technical and economical proposition for large scale industrial applications because it is sulphur free.

In our search for greater efficiency of carbonisation, I do believe that as production engineers you are trying many alternatives to coal gas and water gas, sometimes with marked effect on the combustion characteristics of the resulting mixture which has to be used in the appliances on the district. Although the calorific value and specific gravity and the resulting Wobbe Index may remain constant, other properties of the gas vary widely, sometimes with unfortunate effect on the appliance.

To meet these conditions, the test specifications laid down in the relevant British Standards are considerably harder to comply with. For example, cooker burners must meet the stringent requirements of the combustion test, namely, a CO/CO_2 ratio of less than 0.02 on gases of any A.T.B. number from 50 to 85 without adjustment and without danger of light-back. Of course, this can be done and is being done, but what is not generally realised is that it is being done by sacrifice of thermal efficiency—in other words the cost of the useful therm is increased. To what extent this policy can be maintained in face of electrical competition is open to debate.

We are all aware that the domestic gas load is not increasing and, in fact, is tending to decrease. Probably the most promising line by which this trend may be reversed is domestic space heating, particularly for continuous living room heating. The Clean Air campaign and the very high cost of domestic coal have made the public conscious of fuel costs and more ready to consider alternatives to the traditional open fire. With the highly efficient convector/radiant type of fire there is a good opportunity of capturing the solid fuel load.

For a number of reasons all space heaters now use neat flame burners and aerated burners are not now readily acceptable to the industry. It must be admitted, however, that the neat flame appliance is much more susceptible to variations in gas quality than the aerated type burner. In particular, a slight increase in hydrocarbon content may easily cause the flame of a gas fire to soot badly. In this area, within our Liverpool Group for instance, where benzole washing is not normally carried out, the aromatic hydrocarbon content of the gas is approximately 0.8% by volume. If, for any reason, this figure increases to any extent, sooting troubles would almost certainly be experienced on some gas fires. In other areas where benzole washing is normally practised and the gas usually distributed has a very low aromatic hydrocarbon content, a considerable increase in these hydrocarbons may cause sooting trouble. Such considerable increase in hydrocarbons may well occur if benzole washing is discontinued or if oil gas plant is started up to meet peak load conditions.

Susceptibility to sooting is closely allied to thermal efficiency generally speaking, the more efficient appliance being more prone to trouble. This is as one would expect but, again, bearing in mind the cost per useful therm for gas only those appliances giving the greatest possible thermal efficiency will gain us increased loads from our competitors. The extent to which corrosion occurs and also the amount of gas deposit formed will vary roughly according to the degree of sulphur content in the gas supply. That is to say, if the sulphur content is increased the tendency to corrosion will increase accordingly.

The accurate measurement of gas is a vital factor in the economics of all area boards and, whereas the meter manufacturers will give us a list of instruments which are capable of measurement under arduous conditions, there are four main factors outside the control of the manufacturers whereby the life and accuracy of the gas meter is reduced. (i) Chemical attack by gas and gas liquors; (ii) effect on registration by deposition of water in meter cases and particularly diaphragms; (iii) effect of rust carried through in mechanical entrainment in the gas stream; and (iv) nitrogenous gums.

Analysis of the build up of a gas liquor removed from the case of a gas meter showed the following:—

	grains per gal.
Ammonium thiocyanate	31
„ ferrocyanide	15
„ sulphate	4.4
„ sulphide	1.6
Ferrous sulphate	1.3
Carbon dioxide	31.5

While it is agreed that this might be an isolated example, it is without doubt a fact that the presence of ammonia or ammonium salt has a deleterious effect on diaphragms and brasswork. With the removal of the diaphragm dressing by benzole in the gas the undressed leather, when subject to the action of ammonia, stiffens and puckers. The result of this stiffening of diaphragms is obvious. Back pressure thrown by the meter is increased by the stiffening while puckering is one of the greatest contributory factors in 'fast meters.'

Water in Meter

The effect of water in the meter is, of course, quite different. Oscillation on burners is the most noticeable result, yet generally the least serious. The deposition of water due to the cooling of saturated gas (from 60°F.-46°F.) is in the region of 30-40 gal. per mill. cu.ft. Obviously, if the temperature of the gas leaving the works is not strictly controlled then the volume of water increases. In days gone by high gas temperature and small holder capacity contributed greatly to this problem in meters and also led to difficulties in carcassing falls in pipe lines and the provision, at extra cost, of various traps and syphons throughout the installation.

It might be agreed that we in the Sales and Service Division did not choose the correct position for the meter—in a nice warm place where condensation would not occur and, incidentally, where we could register the water vapour and receive payment for it as gas. Unfortunately, it is not always quite so easy. The consumer, architect, builder and industrialist all have ideas on this subject.

The really serious effect of water on meters is two-fold. The deposition of water in the case outside the diaphragm produces oscillation, inside the diaphragm a fast meter. A new design of meter encloses the diaphragms and uses the outside case as a condenser and thereby tends to prevent the condensate interfering with the leathers.

Water vapour deposited as moisture inside the meter absorbs the slightest traces of NH_3 present in the gas, forming a most excellent electrolyte, the basic factor in anodic corrosion. This can be recognised as pinholing over the complete surface of the internal tin plate. I agree that adequate tin-plating should overcome this difficulty, yet we must realise that a large number of meters are scrapped for this reason. Unfortunately.

the presence of only one small hole is sufficient to make a meter change necessary. Personally, I am not inclined to accept the theory that water vapour and the oxygen in the coal gas are altogether responsible for internal corrosion of meters, although it has been claimed that the incidence of repair of meters, or scrapping them, increases as the oxygen content of the gas increases.

With the successful attempt to control closely gas temperatures and quality we are now faced with a further problem which is fast becoming serious—dust. Higher velocities in trunk and feeder mains, which have resulted from the expansion of the industry, carry forward ferric-oxide particles of increased size dependent upon velocity, a factor familiar to you all as elutriation, which previously lay in the bottom of the mains and services. Over recent years the collection of these particles in the P.P. button chamber has increased beyond measure, totally blocking and wedging the valve. It is interesting to note that this problem of dirty valves is the subject of research into different kinds of material and of these, polytetrafluorethylene, known as P.T.F.E., has shown great promise.

A meter having valves treated with this material was fitted in my house and examined after passing 250,000 cu.ft. of gas. The valves showed very little sign of wear and the frictional drag was extremely low.

I am not too sure that the continued use of the Allan Taylor machine does not contribute a little to this problem. Generally speaking, the type of ferric-oxide resulting from corrosion of a wrought iron pipe is of a plate-like nature, whereas corrosion from a cast iron pipe is more or less of a granular nature.

The bulk of dust found in services has been carried in by mechanical entrainment in the trunk and feeder mains and has been deposited in the service due to the reduced gas velocity at that point. In the old days, quite wrongly, this deposit was blown back into the main by a force pump removing the fine particles of dust further away from the meter. Now the Allan Taylor machines reverses this principle. The mechanically produced vacuum induces a gas velocity at the point of production of something equivalent to 140 in. W.G. decreasing according to distance and resistance encountered.

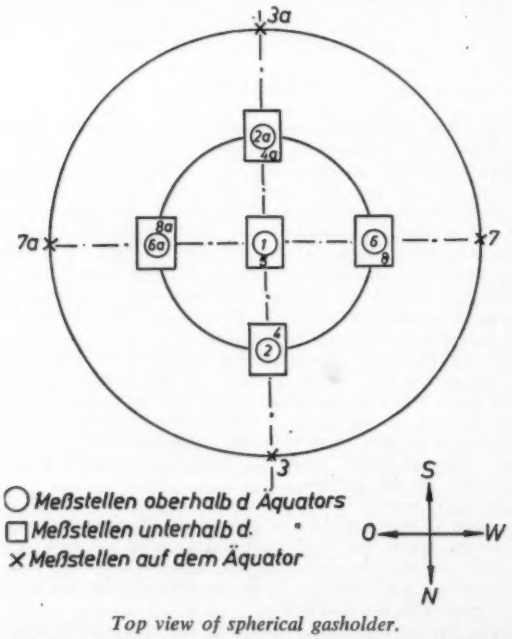
This velocity will and does entrain more and larger particles of matter deposited in the service main. It will entrain particles of dust further afield in the main and, as the velocity decreases, deposit them in thinner and finer layers at a point in the service nearer to the meter.

If it were possible for you members here to give the sales side a gas completely free from sulphur and gum-forming compounds and completely compatible with all other gas produced in the Board's area at an absolute controlled pressure, appliance design could then undergo radical changes. Design could be simplified and far cheaper materials used, with the ultimate result that absolutely first-class appliances could, I venture to suggest, be sold for half the prices at which they are now being sold. This alone would obviously lead to a much greater sale of appliances. But of greater import, the combustion of a purified product would result in the complete elimination of the offensive and irritating odours which are now associated with our gas consuming appliances.

GAS ON THE CONTINENT

Temperatures of Spherical Gasholders

THE rapid release of gas under pressure from spherical gas-holders causes a drop in temperature due to the expansion of the gas. It is well known that certain steels possess a very low impact strength as measured by the notched-bar or Izod test at sub-zero temperatures and it was feared that the safety of the welded steel shell might be endangered. Tests were therefore carried out on a 75 ft. dia. spiral gasholder, electrically welded from 32 to 38 tons per sq. in. fine-grained low carbon steel plates of 1.2 in. thickness. This gasholder is normally filled to a pressure of 125 lb. per sq. in. from a long-distance gas grid during the night from 7 p.m. to 5 a.m. During the next 2½ to 3½ hours the pressure drops to 40 lb. per sq. in., when another gas grid is fed from it, and this is followed by a slow expansion for a local supply. The illustration shows the points where iron-constantan thermo-couples were fitted to the sphere. With an average ambient temperature of −2°C. temperature drops of up to 11°C. were recorded and a calculation showed that the polytropic equation of expansion during the 2½ to 3½ hours appears to have an exponent of 1.05, i.e., that the change is more isothermal in nature than adiabatic. The ambient temperature, wind velocity and relative humidity too have an appreciable influence on the wall temperatures. When the ambient temperature is very low, it is thought that the wall temperatures may well drop to such low values during the time of rapid gas release that the impact strength would be reduced to nearly zero.



Top view of spherical gasholder.

Messtellen oberhalb des Aquators—measuring stations above the equator.

Messtellen unterhalb des Aquators—measuring stations below the equator.

Messtellen auf dem Aquator—measuring stations along the equator.

B. Naendorf and H. J. Koch. *Gas-Wärme.* Vol. 6. No. 6. June, 1957.

Coal Extracts Research

THE British Coal Utilisation Research Association's report for 1956 refers to a method of producing smokeless fuels by the extraction of low-rank coals with coal-tar oils. It has been found that a heated coal/tar-oil mixture (1:4 by weight), after exposure to ultrasonic vibration for less than 10 seconds, may be washed with either an organic solvent or a low-boiling coal-tar oil to give a residue that yields considerably less volatile matter, e.g., 20-23% from a coal of 35% volatile matter.

In view of industrial interest during the year, further consideration has been given to direct uses for the material extracted from the coal by tar oils. Outlets being explored include the use of coal extracts for the production of graphitised carbons and carbon blacks, for addition to pitch to modify its rheological properties, for the production of mineral-free carbons used as constructional materials, or as fillers. Other coal extracts have been used effectively as coatings for condenser tubes for the promotion of dropwise condensation of steam, and the possibility of their use in other plant where the transfer of heat from steam to a metal surface is involved is being considered.

Introducing the Main No. 261 'Romany'

BELIEVED TO BE THE FIRST TRANSPORTABLE FIRE TO PROVIDE CONVECTED HEAT

A NEW space heater with exceptionally high efficiency has been developed by R. & A. Main Ltd. It is the Main No. 261 'Romany,' a transportable radiant/convector fire which can be used in any room where there is a suitable flue outlet; it is believed to be the first transportable fire to provide convected heat.

Overall efficiency is extremely high—over 60%— and, with the exception of the recently introduced Main 'Century' heater, no other gas fire on the market, either fixed or transportable, has an efficiency in any way comparable. The 'Romany's' full-on gas rate is 12,500 B.Th.U. per hour, or 25 cu.ft. of 500 c.v. gas—the maximum allowed by B.S. 1250 for a transportable fire —and the heat output at this full-on rate is almost equal to that of a conventional convector fire at 36 cu.ft. per hour. As a result, running costs are reduced to a point where they compare most favourably with electricity or solid fuel.

The new Main No. 261 'Romany' transportable radiant/convector fire blends happily with contemporary décor.

Heat output is fully variable, and during periods when 'background' heating only is required the gas control tap may be turned to a very low position at which, although little or no glow will be given off by the radiants, a stream of warm air will be emitted from the convection grille.

An additional feature of this new fire is its remarkable room heating rate, which is considerably faster than that of the conventional radiant/convector heater. This has been achieved by fitting a heat exchanger of very low heat capacity which begins to deliver warm convected air within one minute of lighting the fire.

The 'Romany' is constructed principally of sheet steel and is designed on attractive contemporary lines. The base is of large area, making the appliance very stable, and a plastic carrying-handle is provided.

The radiant panel comprises seven bars of a very tough refractory material which is virtually unaffected by thermal shock, and the side and front bricks are of hard refractory. Above the radiants and behind the expanded metal front grille is placed a highly effective heat exchanger which delivers a large volume of hot air to the room. The burner, which is completely silent, is fitted with Bray miniature jets, and an adjustable governor is provided as a standard fitting.

Maintenance has been simplified to the greatest possible extent. The burner can be removed without dismantling the fire and the governor pressure can be adjusted while the appliance is operating. Provision is also made for right or left-hand gas connections.

The overall guard, which can be quickly and easily removed when necessary for maintenance purposes, has been designed as an integral part of the fire and enhances the modern appearance.

The 'Romany' is available in two finishes. Bronze with gold grille and oxidised bronze guard, or in old silver with gold grille and bright zinc plated guard.

Dimensions are:—height, 24½ in.; width, 18⅝ in.; overall depth (over guard and flue nozzle), 9¼ in.; overall depth (front of guard to rear of base), 7 in.; height to top of flue nozzle, 19⅝ in.

This company has also recently added two new boiling burners to its range of small appliances. They are the 300 and the 354, superseding the 231 and the 254.

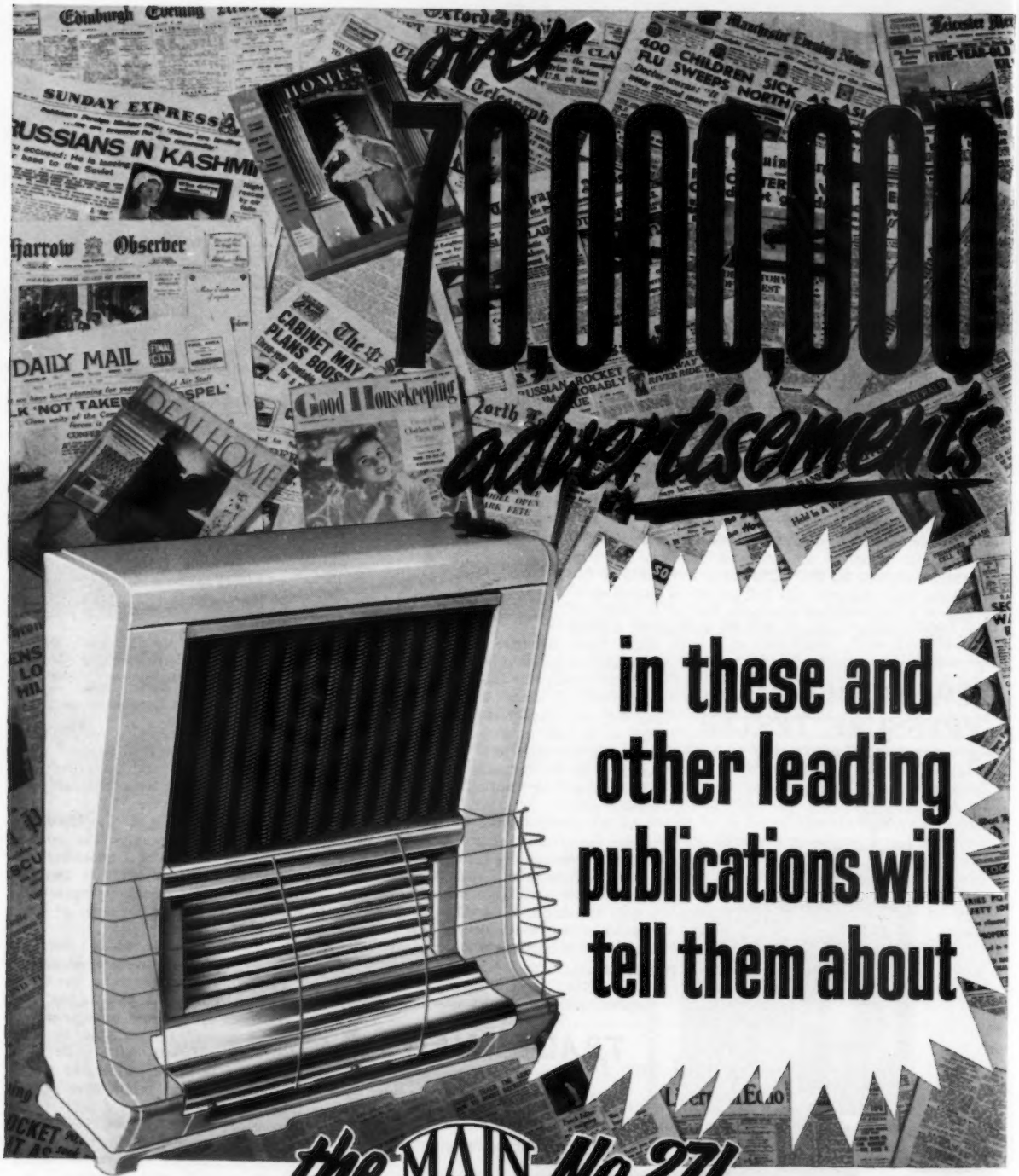
Designed with extra wide pan supports capable of taking all types of vessels, large or small, they are suitable for use anywhere from the bed-sitting room to the canteen or hospital.

The 300 is rated at 12,000 B.Th.U. per hour; the 354, at 10,000 B.Th.U. per hour.—*R. & A. Main, Ltd., 48, Grosvenor Gardens, London, S.W.1.*

NEW MODEL MAINS PRESSURE TESTER IS VERY SENSITIVE

Nash & Thompson Ltd., have recently introduced a new 100 lb. per sq. in. model mains pressure tester (suppressed zero manometer.) This instrument, pictured above, is primarily intended for the leak testing of gas mains, but can be used for the leak testing of other pipe systems, boilers, pressure vessels, etc. It will measure changes in pressure as low as 0.1 lb. per sq. in. at testing pressures as high as 100 lb. per sq. in. In this way extremely small leaks may be detected. —Nash & Thompson, Ltd., Oakcroft Road, Chessington, Surrey.

TRADE NEWS SUPPLEMENT


over
70,000,000
advertisements
in these and other leading publications will tell them about
the MAIN No. 271
CENTURY heater
display the CENTURY-your most efficient aid to secure the space heating load
Note the name-made by MAIN
R. & A. MAIN LIMITED, LONDON and FALKIRK
F.50

The Main JASON

A new and improved bath water heater

The 'Jason' has been designed to provide an inexpensive bath water heater which is easy to install, simple to use and to maintain. An instantaneous heater, it has an output of 1.18 gallons per minute raised 80°F, or an increased output of up to 2½ gallons per minute at lower temperatures. The heater can be fitted with a swivel spout for dual service to bath and wash basin, or with a short stub spout for bath supply only. The pilot, gas and water taps are interlocking. Water supply may be from storage tank or direct from the mains.

The heater is of strong durable construction — finished in white vitreous enamel externally with the top cover and base of aluminium. Tap handles are black plastic.

Hot water from the Jason to bath and basin ...

EASY TO INSTALL — EASY TO SERVICE. The 'Jason' fixes to the wall by means of a vertical channelled bracket, to which are securely attached the burner assembly complete with gas and water taps, and the draught baffler. The water inlet pipe passes up through the bracket and terminates inside the top of the heater in a broken feed. The body of the heater is fixed in position between the burner assembly and the baffler, and not being attached to the wall bracket it can be easily withdrawn for maintenance purposes without disturbing the gas and water supplies or the flue connection.

MAIN WATER HEATERS LIMITED, GOTHIC WORKS, THORNTON ROAD, CROYDON, SURREY

Note the name - made by MAIN

W70

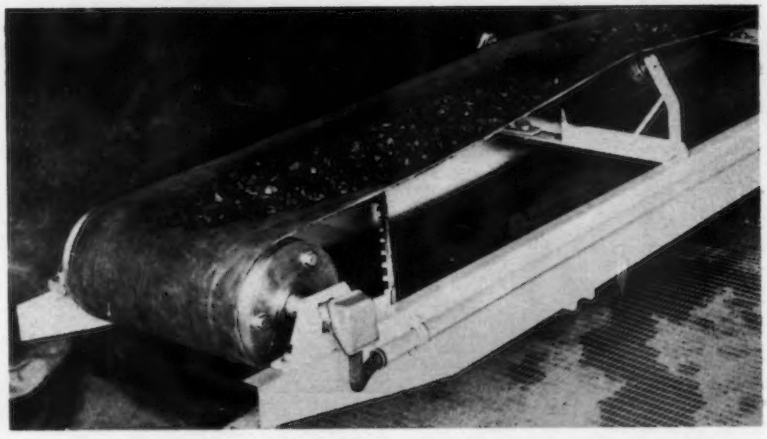
FIRST BRITISH MOTORISED CONVEYOR DRUM

SIMPLE DESIGN WITH MINIMUM WORKING PARTS

FOR many years engineers have sought to make a really satisfactory combination of electric motor and conveyor driving drum. One or two Continental firms have constructed drums of this type with some success, but no established British-made device was available until the combined efforts of T. & T. Works, Ltd., of Billesden, Leicestershire, and Richards Structural Steel Co., Ltd., of Phœnix Works, Leicester, produced the 'Thorite' which is a real contribution to this branch on engineering progress.

It has many outstanding advantages over previous efforts in the same direction. In nearly all the Continental designs the motor itself rotates, although at a slow speed, necessitating current being fed to it through slip rings; with the 'Thorite' this is unnecessary as the motor is held stationary and the motor leads are simply connected up to the external wiring at a junction box at one end of the drum shaft.

Furthermore the design makes a very good range of speeds including if necessary very slow; moreover the design of the drum as a whole is such that the motor can be economically rated so that weight, bulk, and undue expense are avoided.



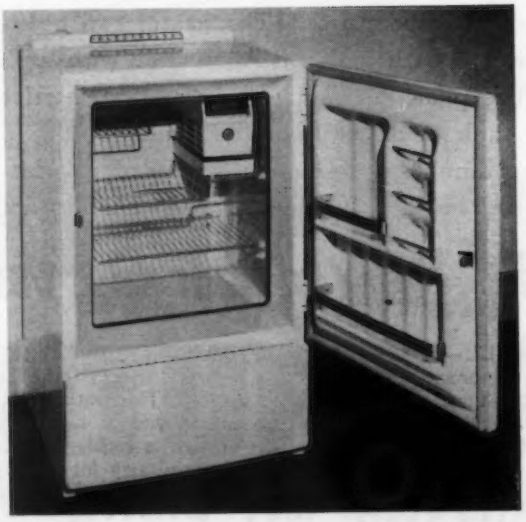
The 'Thorite' motorised conveyor drum is seen in operation.

The design is simplicity itself with an absolute minimum of working parts, but all of these are liberally proportioned and no design risks have been taken for the sake of cheapness or compactness; both the motor and the gearing and all the bearings are designed for very long trouble-free life and no maintenance attention of any sort whatever is required over many thousands of hours of working life.

A full range of sizes, duties, and speeds is rapidly being made available. —*T. & T. Works, Ltd., Billesden, Leicestershire, and Richards Structural Steel Co., Ltd., Phœnix Works, Leicester.*

Heavy Demand Puts Electrolux 1958 Fridge on the Market this Year

HEAVY demand this year has led Electrolux Ltd., to introduce their model L24 'Family' refrigerator, although it is one their 1958 range of new refrigerators.



The new Family model has a shelf space of 5 sq. ft. and incorporates a newly designed silent absorbtion unit of even greater efficiency, an ice compartment which will hold normal size frozen food packets, a new door shelf arrangement for lager, lemonade and fruit juice bottles (there is also a rack for eggs), and a sturdy and resilient door handle in a new type nylon.

The new model is available in attractive external and internal appearance in either white or cream with ice blue door handle, gasket and inner door facings.

The list price will be £43 6s. 11d. plus £19 13s. 1d. purchase tax, making a cash selling price of £63.—Electrolux, Ltd., 153/5, Regent Street, W.1.

REFRACTORY GLAZES AND CEMENTS

THE use of refractory glazes and cements gives protection against spalling, disintegration, abrasion, impregnation, erosion, oxidation and fatigue. Soft and porous refractories are made immune to abrasion and disintegration by the thinnest coating of a suitable glaze.

There are many different cases within the experience of Vincent Davis Glazes, Ltd., of benefit from refractory glazing, and they will be very pleased to pass on this experience to any organisation with problems of this nature.—*Vincent Davis Glazes, Ltd., London Road, Stoke-on-Trent.*

THYLENE PROTECTS YOUR ENGINE AGAINST FROST

THE National Benzole Co., Ltd., are now marketing their 'Thylene' anti-freeze compound, which ensures complete protection for the engine down to 47° of frost. This increasingly popular preventive is sold in quart bottles, ½ gal. and 1 gal. tins, price 57s. 6d. a gal. Suitable for both diesel and petrol engined vehicles, Thylene is carefully blended to prevent corrosion.

No other marketed anti-freeze contains as many properties and ensures such complete protection as Thylene, prepared to the same standard of quality as all other products of National Benzole Company and available from all service stations where the Mercury head is displayed.—*National Benzole Co., Ltd., Wellington House, Buckingham Gate, London, S.W.1.*

Heat-by-the-Yard Supplies a Long-felt Need

IN production processes and in the laboratory the provision of efficient heating of set-ups having complicated shapes has been greatly simplified by the availability of Electrothermal flexible and elastic heating tapes. The long-felt need for a heating tape which can be cut at will, led to the development of 'Heat-by-the-Yard' which enables the user to apply heat to practically any pipe, vessel, valve, etc., by cutting a suitable length of tape from the dispenser and fixing the insulated terminations.

'Heat-by-the-Yard' consists of a continuous network of resistance wires enclosed in a knitted elastic sleeve of glass fibre yarn. It is made in ½ in. and 1 in. overall widths. Lengths of 25 ft. or 50 ft. are supplied in a carton complete with 6 or 12 connectors. The electrical resistance of 'Heat-by-the-Yard' has been arranged so that a normal working length of 12 ft. would require a voltage of 120 V, while a 23 ft. length would require 230 V to obtain maximum temperature, i.e., the normal working voltage is about 10 V per ft. length.

Nickel wire is used in the construction of the resistance network and this will attain its nominal rating at 200-250°C.—*Electrothermal Engineering, Ltd., 270, Neville Road, London, E.7.*

OIL FREE AIR

Recently introduced, the 'Broomwade' Type C 660, dry cylinder, carbon-ring, single-stage air compressor, illustrated here, has an output of 100 cu.ft. of free air per minute at 100 lb. per sq. in. pressure. It was designed for a medium supply of oil free air necessary in chemical food processing and other applications where oil free air is essential.—Broom & Wade, Ltd., P.O. Box No. 7, High Wycombe, Bucks.

RUBBER HOSE CUTS COSTS

CONSIDERABLE saving in pipe replacement and maintenance costs has been effected at the National Coal Board's Lynemouth coal preparation plant by the use of a special heavy-duty rubber hose to convey abrasive magnetite. Still in service after 18 months, this 'Fulflex' hose, as it is called, has already lasted over four times as long as the previous installation—representing a saving of some 150% of its cost.

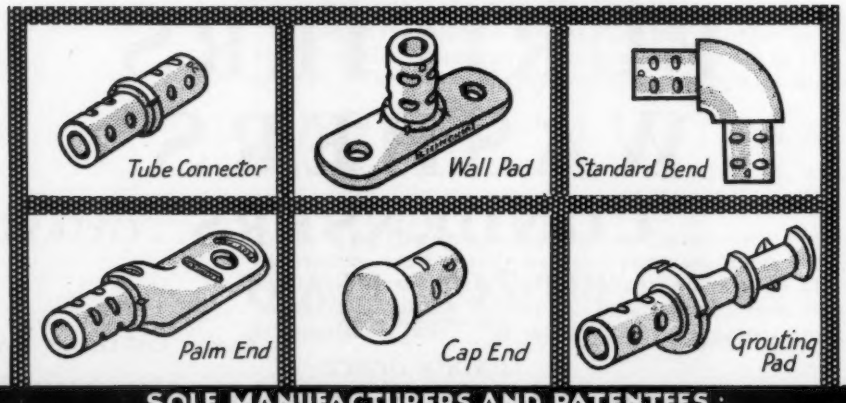
The 12 ft. long 12 in. bore of 'Fulflex' hose concerned was installed in December, 1955, between a primary drainage screen and surge tank to replace two bends and 4 ft. length of mild-steel piping of the same diameter and ⅜ in. wall thickness. It was examined on March 31, 1956, and again in May, 1956, and although little wear was observed, the hose was rotated through 30°—an operation taking only a matter of minutes because of the spigotless construction of the hose. The users this summer were still carrying on this process of rotation at six month intervals and the hose will eventually be reversed end-to-end.

The mild-steel bend and pipes previously used were holed after only four months' service and required patching—frequent leaks occurring during the operational period.—*British Tyre & Rubber Co., Ltd., Herga House, Vincent Square, London, S.W.1.*

LIONGRIP TUBULAR HANDRAILING

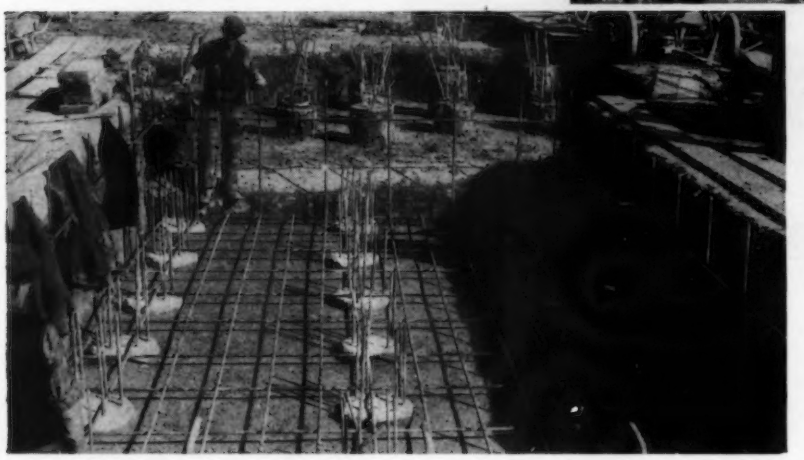
A new system for easy and economical erection of Tubular Handrailing incorporating Liongrip patented fittings.

The top rail is continuous and free from obstruction.



SOLE MANUFACTURERS AND PATENTEES:
LIONWELD LIMITED
MARSH ROAD, MIDDLESBROUGH Tel. 3657

BORED PILES FOR THE N.F.U. KNIGHTSBRIDGE SITE



The heavy foundation loading from this building made normal footings for the columns out of the question —a condition frequently obtaining to-day when higher storeys are permitted. Piling was necessary and the close proximity of other buildings, including a Hospital, precluded the use of heavy driving equipment with its accompanying noise and vibration.

Cementation Bored Piles were selected by competitive tender and the foundation work was completed very successfully notwithstanding the difficult ground conditions unexpectedly encountered.

The CEMENTATION COMPANY LIMITED

HEAD OFFICE: 20, ALBERT EMBANKMENT, LONDON, S.E.11.
Tel.: RELiance 7654 (15 lines)

OFFICE WORKS: BENTLEY WORKS, DONCASTER
Tel.: DON 54175 & 54136

KIRKHAM, HULETT & CHANDLER LTD
UNION FOUNDRY, MANSFIELD, NOTTS.

TAR EXTRACTORS
PREHEATERS
PURIFIERS
WASHERS
CONDENSERS
BENZOL PLANT

Tel: MANSFIELD 1256/7 Grams: CASTINGS MANSFIELD

LONDON OFFICE
Stafford House, Norfolk Street, Strand, W.C.2.
Phone: Temple Bar 9910 Grams: Washer, Estrand, London.

WALTER KING SERVICES

PERIODICALS . . .

GAS JOURNAL. *(Weekly.* Wednesday, By Post, **1s. 9d.)**

The "Gas Journal" has existed as an integral part of the Gas Industry since 1849. Unbiased policy, technical knowledge, accuracy and reliability combine with an extensive news service and modern make-up to make the Journal the leading Gas Industry newspaper.

Annual Subscription (including a copy of the "Gas Journal" Calendar and Directory): Home : **65s**; Overseas **72/6d.**

GAS SERVICE AND DOMESTIC COKE.

(Monthly. By Post, **1s. 11d.)**

"Gas Service and Domestic Coke" is the specialist magazine for the Sales and Service personnel of the Industry. It covers all aspects of gas service from the holder to the burner and contains a special large section each month devoted to the utilization of coke. In addition to sound editorials, news items and specially contributed article: "Gas Service and Domestic Coke" also reports in the fullest possible manner the activities of the numerous Salesmen's Circles, and Solid Fuel Bodies.

Annual Subscription : Home : **18s**; Overseas **22/6d.**

BOOKS and ANNUALS . . .

Some current works covering the manufacture, distribution, and sale of gas are :—

KING'S MANUAL OF GAS MANUFACTURE. Now being issued in self-contained sections. Sections available and prices on application.

MANUAL OF GAS FITTING. By R. N. Le Fevre. **35s.**

DOMESTIC UTILIZATION OF GAS. By Smith & Le Fevre. **20s.**

ANNUALS:—

"Gas Journal" Calendar and Directory, 25s. ; "Gas Service" Pocket Book 6s.

BINDING . . .

In addition to permanently binding subscribers' journals, (particulars and prices for which we shall be pleased to give on application) we can supply TEMPORARY BINDERS for the Gas Journal, Gas Service and King's Manual of Gas Manufacture, thus enabling readers to *bind their copies as received.* The danger of mislaid or damaged copies is eliminated.

Gas Journal temporary binder } . . . . . **14s.** each inc. postage.
Gas Service " }
King's Manual " . . . . **10s. 3d.** each inc. postage.

PHOTOGRAPHY . . .

Walter King Photographs specialize in Gas Industry photography of every description—work in progress series, plant, appliances, showroom displays, exhibition stands, social and educational visits of all kinds. Tours for various areas of the country can be arranged. First class photography at competitive rates. Full particulars on application.

WALTER KING LTD., 11 BOLT COURT, FLEET STREET, LONDON, E.C.4

FLEet Street 2236-7.

PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price 1/6d.; by post 1/9d.

Subscription Rates : Home 65/– ; Overseas (from Sept 1, 1957) 72/6 per annum ; (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 2/6 per line (approx. 7 words)—minimum charge 10/–. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10 in. deep × 7 in. wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

NORTHERN MANAGER: Philip W. B. King, 11, Tewit Well Road, Harrogate. *Telephone:* Harrogate 69212.

SOUTHERN & MIDLANDS REPRESENTATIVE: A. Engelhardt, T.D., 11, Bolt Court, Fleet Street, E.C.4. *Telephone:* Fleet Street 2236-7.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: FLEet Street 2236-7. *Telegrams:* Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION LIMITED

PALMERSTON HOUSE, BISHOPSGATE, LONDON, E.C.2.

Telegrams: "Purification, Stock, London" Telephone: London Wall 7938/9 & 7930

PATENTS

KINGS PATENT AGENCY, LTD.
(Director, B. T. King, A.I.M.E., Patent Agent)
Advice, Handbook, and Consultations free. 146a Queen Victoria Street, London, E.C.4, 'Phone : City 6161.

PLANT FOR SALE

SPECIAL OFFER: Large quantity of new cast iron fullway valves, all iron parts, 8 in., 10 in., 12 in. and 14 in. for sale. The Midland Iron & Hardware Co. (Cradley Heath) Ltd., Cradley Heath, Staffs. Tel.: Cradley Heath 6264 and 5.

PRESSURE Vessels. 32′ × 8′ 6″ dia. and 30′ × 8′ 6″ dia. for 100 lbs. and 120 lbs. W.P. Insurance reports. Cleckheaton Engineering Co., Ltd., Cleckheaton, Yorks.

UNUSED 48″ Glenfield all iron sluice valves. 55½″ flanges 2′-3½″ long. Cleckheaton Engineering Co., Ltd., Cleckheaton, Yorks.

EAST MIDLANDS GAS BOARD

LINCOLNSHIRE DIVISION
SLEAFORD WORKS
BENZOLE PLANT

OFFERS are invited for the PURCHASE of a Sutcliffe Speakman activated carbon benzole plant, which is surplus to requirements at the above works.

The plant, which was manufactured in 1941, has a daily capacity of 250,000 cu.ft. and is complete with pumps, automatic operator and mild steel storage tanks.

Enquiries should be addressed to the Local Manager, East Midlands Gas Board, High Street, Grantham, Lincs.

"KLEENOFF" *
THE COOKER CLEANER

"KLEENOFF"
FIBRE BRUSHES
RUBBER MOPS

"KAY-DEE" *
KETTLE DESCALER

for resale to the public and in bulk for works use

BALE & CHURCH, LTD.

CROMPTON WAY, CRAWLEY, SUSSEX

APPOINTMENTS VACANT

WEST MIDLANDS GAS BOARD
BIRMINGHAM & DISTRICT DIVISION
VACANCIES FOR

SECOND ENGINEERING ASSISTANTS

APPLICANTS should be Associate Members of the Institution of Gas Engineers, or possess equal qualifications. Successful candidates will be placed at one of the four Birmingham Gas Works, which have productive capacities ranging from 21 to 53 mills. cu. ft. per day and offer opportunities for a wide experience and advancement.

The duties will entail assistance in the supervision and technical control of coal gas and/or water gas production, including some of the associated ancillary plant, with direct responsibility to the Assistant Engineer.

A flat adjacent to the Works may be available as temporary accommodation if desired.

The salary will be within APT. Grade 8 of the National Salary Scales for Gas Staffs (£745-£825 p.a.).

The posts are pensionable, and the successful candidates may be required to pass a medical examination.

Applications, stating age, experience, positions held and qualifications should be addressed to Mr. J. E. Wakeford, Divisional General Manager, West Midlands Gas Board, Gas Offices, Edmund Street, Birmingham 3, **to reach him not later than October 26, 1957.**

J. SWAN,
Secretary to the Board.

COKE OVEN MANAGER: South Durham Steel & Iron Co., Ltd., invite applications for this post at the Coke Oven, Bye-Product and Benzole Refining Plant at the Middlesbrough Works. Superannuation and house provided with a salary commensurate with experience. Applications marked ' Private and Confidential ' to General Works Manager, Cargo Fleet Iron Works, Middlesbrough.

APPOINTMENTS VACANT (ctd.)

FORD MOTOR COMPANY LTD. have a vacancy for an ENGINEER, aged 26-35, in connection with the modernisation scheme for their Coke Oven Plant. Applicants should have had drawing office experience in the design and layout of modern coke ovens and by-product plant in an engineering capacity at such or in the chemical engineering industry. This is a well paid post with participation in a generous non-contributory pension scheme. Please send details of experience and qualifications to Training and Recruitment Department (012a), Ford Motor Company Ltd., Dagenham, Essex, quoting reference MEP.

COKE OVEN MANAGER.—South Durham Steel & Iron Co., Ltd., invite applications for this post at the Coke Oven, Bye-Product and Benzole Refining Plant at the Middlesbrough Works. Superannuation and house provided with a salary commensurate with experience. Applications marked " Private and Confidential " to General Works Manager, Cargo Fleet Iron Works, Middlesbrough.

HARROGATE SALES AND SERVICE CONFERENCE
October 1–3

A full, illustrated report of this recent Conference, together with constructive editorial comment, appears in the October issue of

"GAS SERVICE"

The Price of this "SPECIAL" will be

2/-

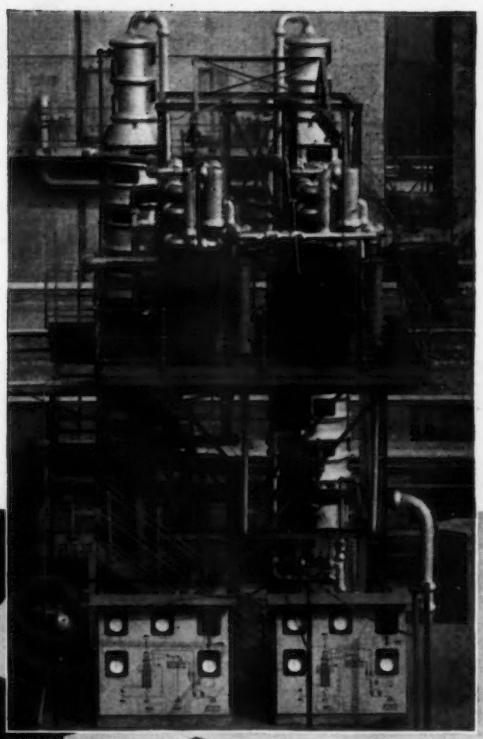
and copies will be available next week

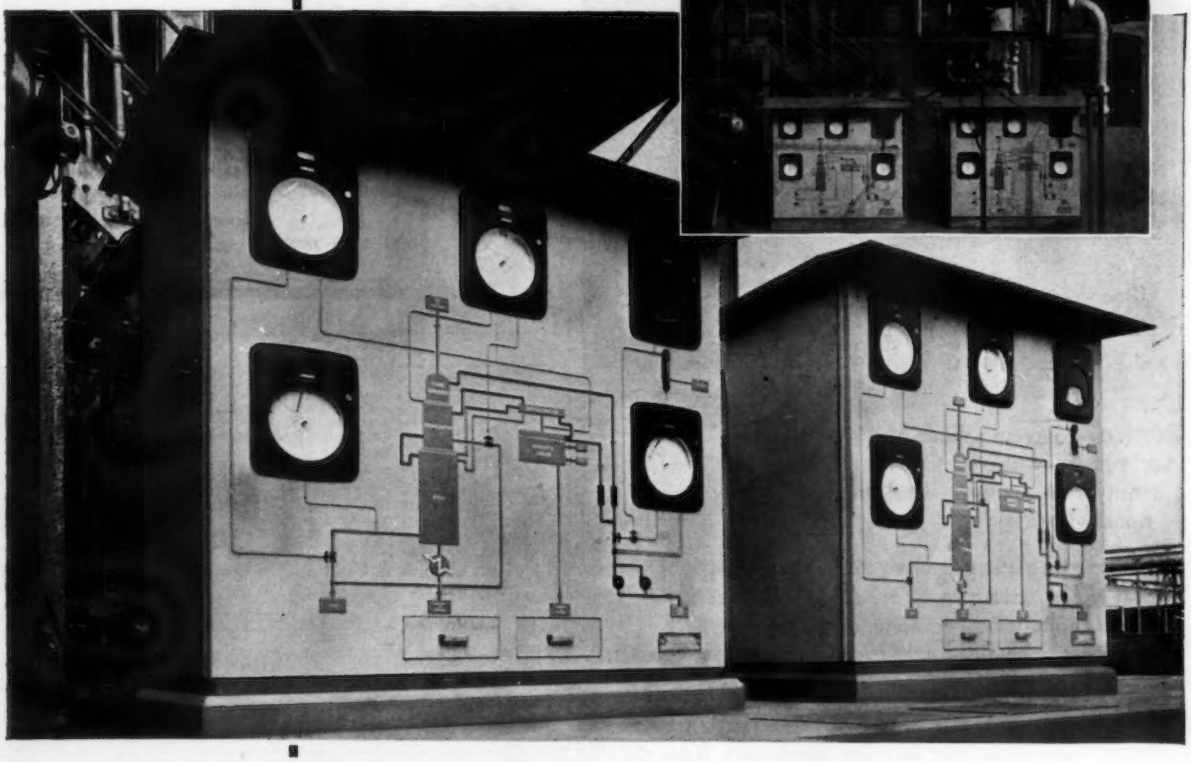
Are all your Salesmen getting their own copy for study and interest ?

WALTER KING LTD.
11, Bolt Court, Fleet Street, London, E.C.4.

The illustration on the right shows the two Liquor Concentration Plants installed at the East Midlands Gas Board's Car House Works, Rotherham.

Each Plant is capable of handling 750 gallons per hour of crude liquor containing 1·8% of free ammonia, and to produce from it a concentrated liquor containing 22% of ammonia by weight.





Liquor Concentration Plant

by **HOLMES**

FOUNDED 1850 HOLMES HUDDERSFIELD

W. C. HOLMES & CO. LTD. · TURNBRIDGE · HUDDERSFIELD

Huddersfield 5280 London : Victoria 9971 Birmingham : Midland 6830

C8520

Gunite

One of the reinforced concrete structures reconditioned with Gunite for the City of Carlisle Gas Undertaking

Gunite—concrete applied by air pressure—has numerous applications where its great density and extreme adhesion have exceptional value.

For repairing reinforced concrete it has particular merit, as, due to the method of application, a uniform density and adherence is obtained whenever Gunite is applied.

For lining coal bunkers and steel chimneys it possesses great resistance to corrosion and protects steel-work from the abrasive action of coal or coke.

96, VICTORIA STREET, S.W.1
Telephone : Victoria 7877 & 6275

10, ROYAL CRESCENT, GLASGOW C.3
Telephone : GLASGOW DOUGLAS 8671

THE CONCRETE PROOFING CO., LTD.

Handbook "GUNITE" sent on request

ULTRASORB ACTIVATED CARBON

ULTRASORB Carbons are available for recovery of most industrial solvents, benzole extraction, water purification and other gas and liquid phase applications.

BRITISH CARBO NORIT UNION LIMITED

LONDON ROAD : WEST THURROCK : GRAYS ESSEX
Grams: 'Bricarbun Grays' Tel.: Grays Thurrock 4845

CARBO - UNION - WHESSOE

Activated Carbon Recovery Plant for the purification of gases and the recovery of vapour phase solvents.

Whessoe Ltd : Darlington : Co. Durham
Cables : Whessoe Darlington Tel.: Darlington 5315
LONDON OFFICE :
25 VICTORIA STREET, S.W.1. ABBey 3881

FROM STOCK
4 in. Reconditioned Cast Iron Flanged Pipes 9 ft.
VALVES for GAS, WATER and STEAM
Sizes ¼ in. to 36 in. in C.I., gunmetal and steel.
STEEL TUBES
All Sizes up to 24 in. Flanged, Plain ends, Screwed and Socketed, Loose Flanged, Victaulic and Unicone Joints.

Midland Iron & Hardware Co., (Cradley Heath) Ltd.,
CRADLEY HEATH, STAFFS.
Telephone: Cradley Heath 6264-5-6. *Telegrams:* Pipes, Cradley Heath.

CASES
FOR PERMANENT BINDING
Quarterly Volumes of the 'Gas Journal'

9/6 each, post free

Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.

Registered as a Newspaper. Printed by STRAKER BROTHERS LTD., E.C.2 for WALTER KING LIMITED, 11, BOLT COURT, FLEET ST., LONDON, E.C.4., Wednesday, October 16, 1957

FROM PLAN TO PERFORMANCE

drawing board

works

site

WEST'S . . . a complete organisation for the design, fabrication and erection of carbonization plant

GLOVER-WEST CONTINUOUS VERTICAL RETORTS · C.O.L. INTERMITTENT VERTICAL CHAMBERS · COLLIN COKE OVENS

WEST'S GAS IMPROVEMENT COMPANY LIMITED

ALBION IRONWORKS · MILES PLATTING · MANCHESTER 10

Tel: COLlyhurst 2961 Grams: Stoker, Manchester

London: Columbia House, Aldwych, W.C.2. Tel.: HOLborn 4108

C.O.L. Div: Chandos House, Buckingham Gate, S.W.1. Tel.: ABBey 6912

PL3

FLAMEPROOF

circuit control

FLP

3574 GROUP I
3575 GROUP II

For applications in hazardous locations in every industry the B.S.A. ACME SNAP-LOCK FLAMEPROOF LIMIT SWITCH has been specially developed to ensure complete protection and to enable easy installation. Moreover, its design and construction provide for long and reliable service under conditions of extreme severity.

For non-hazardous applications there is the STANDARD SNAP-LOCK, water, oil and dust proof, and equally robust for heavy duty.

They are available as single pole, double break: one normally closed and one normally open circuit (reversible by transferring the return spring) or maintaining in either position, or supplied with central neutral position and convertible to various circuit arrangements.

Let us send you further details.

★ Buxton Certificates:
No. 3574 (Group I gases).
No. 3575 (Group II and III gases).

★ Meehanite iron castings.

★ Self-wiping solid silver contacts.

★ Interchangeable plugs and sockets.

★ Single SWA cable entry (standard); double entry if required.

★ Levers for a variety of applications.

MADE UNDER LICENCE FROM NATIONAL ACME CO. U.S.A.
B.S.A. TOOLS LIMITED. BIRMINGHAM. 33. ENGLAND

SOLE AGENTS GT. BRITAIN:
BURTON GRIFFITHS & CO. LTD. *Snap-Lock Divn:* 93 ALBERT EMBANKMENT. LONDON. S.E. 11
TELEPHONE: RELIANCE 3891

B.S.A. ACME SNAP-LOCK